SECONDARY SCHOOL CURRICULA

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SECONDARY SCHOOL CURRICULA

BY

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PREFACE

This volume is the result of the need for a comprehensive and general critical treatise on secondary school curricula. Its scope has been determined by the belief that it is no longer possible to treat in a single volume of ordinary dimensions both the general aspects of curricula and the issues which arise within all the departments of the secondary school program of studies.

The first two parts of this treatise, those devoted to the history and the criticism of curricular practices, perform five functions. First, they indicate the fundamental character of certain practices and ways by which progress has been hastened. Second, these discussions provide a background for nearly all the curriculum problems of the present and, by doing so, enable educators to see the force if not the merit of many principles which have been employed in curriculum making. Third, the historical setting enables the educator to see that many desirable curriculum innovations have, in the remote past, met with opposition similar to that which science is now encountering; and also to see that the present generation is not the first to be intrigued by the winsome arguments of practical men who desire to eliminate theory and to substitute therefor short, pretentious schemes for learning. Fourth, these sections indicate important changes in the sociological attitude of educators of different eras and the effects which these changes have produced within curricula. Finally, the historical survey reveals the underlying characteristics of periods of stagnation and of

progress and indicates, therefore, some of the tendencies which should be encouraged in present-day reconstruction.

The parts that are devoted to discussions of objectives, pupils, and local conditions emphasize the importance of the sociological approach to curriculum making. Care has been taken to show, however, that the sociological approach does not supplant, but instead gives meaning to, older formulations of objectives. No attempt has been made in discussing pupils and local conditions to maintain the artificial barrier which at times exists between curricula and procedures.

The chapters on reconstructing and administering curricula outline critically the forms which reconstruction is taking and the cardinal principles of curriculum administration. Although the importance of exhibiting representative programs of study is recognized, the offerings of progressive schools vary from time to time, and no space has been devoted to the reprinting of such programs in this treatise. It is urged, however, that students of curricula avail themselves of reports and handbooks of important schools.

Besides acknowledging indebtedness to scores of writers and publishers whose works are cited in this volume, the author acknowledges the assistance and stimulation of his students in four universities and the painstaking reading and helpful criticism of the manuscript by his colleagues, Professors A. S. Barr, W. J. Chase, J. G. Fowlkes, and M. H. Willing.

Willis L. Uhl

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EDITOR'S INTRODUCTION

The secondary-school curriculum is the mirror from which the philosophy of modern education is reflected in so far as the training of the high-school boy and girl is concerned. For nearly fifty years special effort has been made to produce a curriculum for secondary schools that would make a complete life, a vivid realization for the graduates of our modern high school. For practically a decade a concerted effort has been directed toward the creation and perfection of a scientific basis for curriculum construction.

Such terms as *utilitarian values*, *job analysis*, *frequency of appearance in daily life*, and *the project method* are familiar terms in describing means of curriculum construction. Devotees of one of these methods of curriculum development are implicitly confiding in their trust of the adequacy and reliability of their particular chosen technique. But, as it is impossible for the classroom teacher even to approach complete skillfulness by employing only one method of instruction, so it is impossible to develop a real scientific curriculum by depending upon only a single method of technique. If the modern school curriculum is to be defined as a plan of activities offered by the school for the students of that particular school, and if, at the same time, such curriculum is to be a guide for the teacher as the directing agency in the presentation of these activities, such a curriculum must be founded and maintained on the basis of a combination of all the existing methods that have originated and sprung from the fount of our educational philos-

ophy of all times. Also, for the complete functioning of this curriculum more thought must be given to the administration of such a curriculum.

In the following volume Dr. Uhl, in a most thoroughgoing fashion, has traced some principles of curriculum construction that apparently have operated since the beginning of man; likewise has he pointed out some of the relative advantages and weaknesses of the various bases for formulating the curriculum. In conclusion he has attempted to crystallize a code of basic principles of curriculum construction and administration.

Inasmuch as the success of any project is in a large measure determined by the way in which it is administered, it would seem that a union of the principles of curriculum construction with administration policies is imperative. For those who wish to know the development of our modern school curriculum and likewise who are desirous of applying calibrating criteria on the basis of which they can construct a scientific curriculum, this work will be of much help.

JOHN GUY FOWLKES.

PART I

THE ORIGIN AND DEVELOPMENT OF SECONDARY SCHOOL CURRICULA

SECONDARY SCHOOL CURRICULA

CHAPTER I

PRIMITIVE CURRICULUM PRACTICES

The primitive secondary school. Imagine, if you will, a glorious day and all the members of the tribe gaily advancing in groups to the soft grass of the open plain, and you will see primitive adolescents tripping their way to their secondary school. For the school of these primitive boys — girls are often given equally formal training for their duties — begins by tribal marching, dancing, and singing. The women take the boys to their place of acceptance by the men. When the open plain is reached the dancing begins — the women arrayed in line begin their dance forward and backward with the boys, while the men in a line facing the women dance in and out of the openings in the women's line. In and out, back and forth, sally the two lines until at the last advance the women fall to the ground and are carefully concealed, while the boys are frisked away by the men amid the shrieks of bull-roarers. No longer need the boys dance with their sisters and their mothers; with the onset of puberty, nature has marked the members of their bold sex for deeds of valor, for exploits too strenuous for women, for schemes too daring and subtle for their timid, heavy-headed sisters. If these boys succeed in their educational tasks, they will thereby be initiated into the life of the stalwart sex and may thereafter have quarters in the men's house.

Prior to this ceremony of recognized manhood, the boys have already received certain elementary training. They have learned from their fathers and mothers, and from each other, according to the tribal arts of life, how to swim, how to make certain rude implements, how to make fire, how to hunt, how to fish, how to hurl weapons, how to weave, or how to make pottery. While that elementary training was in progress for the boys, their sisters received such fundamental preparation as fitted the feminine sex in the particular tribe; this training might include, as among the girls of the Homeric Age, carding, spinning, weaving, embroidering, and bread-making, or, among other peoples, the girls' training might include pottery, flaking stones for implements and weapons, stripping bark for clothing and other purposes, beadwork, and cookery.

Before the boys may fully share life with the male adults of their tribe and live in the men's house, it is fitting that certain civic and vocational training be added to the incidental elementary schooling which they have already received. This subsequent training is often referred to as a series of initiatory rites, because it marks the end of childhood and abiding with children and women and the beginning of manhood and living with men. These rites are of varying duration, according to the wealth of tribal lore. Soon after the picturesque opening of adolescent training, the boys are, in many tribes, assigned individually to the old men of the tribe, who instruct them thoroughly in tribal knowledge, superstition, charms, the ways of the gods, the rites and duties pertaining thereto; the ways of men, the customs, regulations, and other civic arrangements; the secrets of animism, including much that women could never know — and remain in a proper state of subjection; and the standards and ideals of men of the past and the present

in both peace and war. Although much of the boy's training is undertaken to enforce group solidarity rather than to present a formal body of subject matter, no modern student of Latin has a more formal task than those lessons of the primitive boy; no modern teacher undertakes with greater earnestness the solemn duty of making citizens than does the ancient elder who accepts his zealous lad; no modern school plant provides a more auspicious setting for serious mental activity than that within which the youth of young tribes is set to work. In short, the primitive youth is trained as is the youth of other levels according to the culture of his tribe in from four to seven branches of the curriculum. These branches we should call by the following terms: literature, mathematics, science, social studies, religion, fine and applied arts, and physical education. The content of each of these branches of training will be described in subsequent paragraphs. The descriptions of this content are based upon source materials and as far as possible give illustrations of content actually used or still in use by primitive peoples. Had the records of ancient primitive peoples been available, such records would, of course, have been utilized.

What primitive boys study. 1. *Literature.* All tribes possess traditions or folklore. The quality and variety of these literary elements vary with the tribal plane of culture. A review of thousands of pages of this folklore convinces one that much of it will never develop and branch into the fulness of a beautiful tree. Many specimens excel Boccaccio in frankness, a few of them even approach his gift for story-telling, while thousands of them reek with the primitive filth from which they spring. The samples which follow indicate a few of the poetic flights and something of the commonplace which one finds among the collected

lore of primitive man. Many other similar samples can be found in the school readers of our own day.

The Tale of the Maiden who was Sacrificed by her Kin, and whom her Lover Brought back from Below

Told by Na-Ga-Tu-U, Mother of One of the Herds of the Chief N'Du-I-Ni

The sun was very hot and there was no rain, so the crops died, and hunger was great; and this happened one year, and again it happened a second, and yet a third year the rain failed; so the people all gathered together on the great open space on the hill-top, where they were wont to dance, and said each to the other, "Why does the rain delay in coming?" And they went to the Medicine-Man, and they said to him, "Tell us why there is no rain, for our crops have died, and we shall die of hunger?" And he took his gourd and poured out the lot, and this he did many times; and at last he said, "There is a maiden here who must be [illegible]t if rain is to fall, and the maiden is Wanjiru. The day [illegible] morrow let all of you return to this place, and every one [illegible] from the eldest to the youngest bring with you a goat for the purchase of the maiden."

So the day after the morrow, old men and young men all gathered together, and each brought in his hand a goat. Now they all stood in a circle, and the relations of Wanjiru stood together, and she herself stood in the middle; and as they stood the feet of Wanjiru began to sink into the ground; and she sank to her knees and cried aloud, "I am lost," and her father and mother also cried and said, "We are lost"; but those who looked on pressed close, and placed goats in the keeping of Wanjiru's father and mother. And Wanjiru went lower to her waist, and she cried aloud, "I am lost, but much rain will come"; and she sank to her breast: but the rain did not come, and she said again, "Much rain will come"; then she sank to her neck, and the rain came in great drops, and her people would have rushed forward to save her, but those who stood around pressed into their hands more goats, and they desisted.

So she said, "My people have undone me," and sank to her eyes, and as one after another of her family stepped forward to save her, one of the crowd would give to him or her a goat, and he fell back. And Wanjiru cried aloud for the last time, "I am undone, and my own people have done this thing." And she vanished from sight, and the earth closed over her, and the rain poured down, not, as you sometimes see it, in showers, but in a great deluge, and every one hastened to their own homes.

Now there was a young warrior who loved Wanjiru, and he lamented continually, saying, "Wanjiru is lost, and her own people have done this thing." And he said, "Where has Wanjiru gone? I will go to the same place." So he took his shield, and put in his sword and spear. And he wandered over the country day and night; and at last, as the dusk fell, he came to the spot where Wanjiru had vanished, and he stood where she had stood, and, as he stood, his feet began to sink as hers had sunk; and he sank lower and lower till the ground closed over him, and he went by a long road under the earth as Wanjiru had gone, and at length he saw the maiden. But, indeed, he pitied her sorely, for her state was miserable, and her raiment had perished. He said to her, "You were sacrificed to bring the rain; now the rain has come, I will take you back." So he took her on his back like a child, and brought her to the road he had traversed, and they rose together to the open air, and their feet stood once more on the ground, and he said, "You shall not return to the house of your people, for they have treated you shamefully." And he bade her wait till nightfall; and when it was dark he took her to the house of his mother, and he asked his mother to leave, and said he had business, and he allowed no one to enter. But his mother said, "Why do you hide this thing from me, seeing I am your mother who bore you?" So he suffered his mother, but he said, "Tell no one that Wanjiru is returned."

So she abode in the house of his mother; and then she and his mother slew goats, and Wanjiru ate the fat and grew strong; and of the skins they made garments for her, so that she was attired most beautifully.

It came to pass that the next day there was a great dance, and her lover went with the throng; but his mother and the girl waited till every one had assembled at the dance, and all the road was

empty, and they came out of the house and mingled with the crowd; and the relations saw Wanjiru, and said, "Surely that is Wanjiru whom we had lost"; and they pressed to greet her, but her lover beat them off, for he said, "You sold Wanjiru shamefully." And she returned to his mother's house. But on the fourth day her family again came, and the warrior repented, for he said, "Surely they are her father and her mother and her brothers." So he paid them the purchase price, and he wedded Wanjiru who had been lost.[1]

STORIES FROM BORNEO

We'll Make It Tomorrow

One wet night Kra, the monkey, and Raong, the toad, sat under a log complaining of the cold. "Kr-r-r-h," went Kra, and "Hoot-toot-toot" went the toad. They agreed that next day they would cut down a *kumut* tree and make themselves a coat of its bark. In the morning the sun shone bright and warm, and Kra gambolled in the tree-tops, while Raong climbed on the log and basked in the sunlight. Presently down comes Kra and sings out, "Hello, mate! How are you getting on?" "Oh! nicely," says Raong. "Well, how about that coat we were going to make?" says Kra. "Oh! bother the coat," says Raong. "We'll make it tomorrow; I'm jolly warm now." So they enjoyed the sunshine all day long. But, when night fell, it began to rain again, and again they sat under the log complaining of the cold. "Kr-r-r-h," went Kra, and "Hoot-toot-toot" went Raong. And again they agreed that they must cut down the *kumut* tree and make themselves a coat of its bark. But in the morning the sun was shining again warm and bright; and again Kra gambolled in the tree tops and Raong sat basking in the sunshine; and again Raong said, "Oh! bother the coat, we'll make it tomorrow." And every day it was the same, and so to this day Kra and Raong sit out in the rain complaining of the cold, and crying "Kr-r-r-h" and "Hoot-toot-toot."

[1] Routledge, W. S. and Katherine. *With a Prehistoric People.* Edward Arnold, London, 1910. Pp. 287–289.

Stupid Saleh

One day Saleh and his father set out in their boat for their farm. "Look out for logs" (i.e. floating timber), said Saleh's father. They had not gone very far when Saleh sings out, "I see some timber." "Where?" says his father. "Why, there on the bank," says Saleh, pointing to the jungle. "Oh! you silly," says his father, "go on." So they went on and landed, and the father, leaving Saleh to cook some rice in the large pot, began to cut down some trees. Presently he came back and found Saleh with the pot upside down over the fire, and nothing cooked. "What are you at?" cries the father. "Well," says Saleh, "I put the pot over the fire as you told me to do, but when I poured the water on it, it all ran into the fire and put it out." "You stupid boy, you should have put the pot on the other way up." "But you didn't tell me so," says Saleh.

The father had chipped his axe, so he sends Saleh home to fetch another. Saleh sets out gaily singing, the blade of the axe lying in the bow of the boat. Soon the boat strikes a snag and overboard goes the axe-blade. "Oh, bother!" says Saleh, "but never mind, I'll mark the place," and he whips out his knife and cuts a notch in the gunwale of the boat at the spot where the axe fell in. Arriving at the landing stage before his father's house, he begins to dive into the water to find the lost axe-head, and continues vainly seeking it till his mother comes out to ask what he is doing. "I'm looking for the axe that fell into water just at this notch, as I was coming down river," says Saleh. "Oh! you are a stupid," says his mother, and fetches him a new axe. Saleh goes back to his father, who has found a fruit tree. He tells Saleh to gather the fruit in his basket while he goes on felling trees. Presently the father comes back and finds Saleh fastened with his back to the tree by the shoulder-basket, which he has put right round its stem, and his legs going up and down. "Hello! what *are* you up to now?" says the father. "Why, I'm carrying away the whole tree to save trouble," says Saleh, "and I'm watching the clouds up there to see how fast I'm walking with this tree on my back."[1]

[1] Hose, Charles, and McDougall, William. *The Pagan Tribes of Borneo.* Macmillan and Company, 1912. Vol. II, pp. 151–152.

2. *Mathematics.* Among primitive as among cultured peoples, the conditions of life — physical and economic — determine largely the curricular activities. The following descriptions portray a highly complicated system (that of the Borloki) and a very simple system (that found at Alice Springs, Australia). As the Borloki of Congo are keen traders, the boys of the tribe must know the first cost of the articles which they sell, the time spent in hawking them, and the payment and keep of those who help to paddle the trader from place to place in search of a buyer. For this mercantile activity, the boys are thoroughly trained in an elaborate system of counting, which Weeks describes as follows:

The numerals from 1 to 5 are declinable. The letter in brackets is the particle that changes according to the class of the noun used, e.g., two persons would be *batu* (*ba*) *bale* = persons two, but two cloths would be *bilamba* (*bi*) *bale* = cloths two.

The numerals are: 1, (*y*) *awi;* 2, (*i*) *bale;* 3, (*i*) *atu;* 4, (*i*) *ne;* 5, (*i*) *tanu;* 6, *motoba;* 7, *nsambu;* 8, *mwambi;* 9, *libwa;* 10, *jumu* or *mokangu mwawi* = one tying; 11, *jumu na* (*y*) *awi;* 12, *jumu na* (*i*) *bale;* 20, *mikangu mibale;* 30, *mikangu miatu;* 40, *mikangu mine;* 50, *mikangu mitanu;* 60, *mikangu motoba;* 70, *mikangu nsambu;* 80, *mikangu nwambi;* 90, *mikangu libwa;* 100, *nkama or munkama;* 200, *minkama mibale;* 1000, *nkutu yawi;* 2000, *nkutu ibale;* 10,000, *mokoko;* 20,000, *mikoko mibale.*

The meaning of *mikangu mibale* (20) is, two tyings. 10 is often called *mokangu mwawi* = one tying, from *kanga* = to tie. It is the custom of the natives to roll their 15-inch brass rods (the currency) into a series of rings about 1½ inches in diameter, and these they run one on another, like split rings, until there are ten linked together, and they call that *mokangu mwawi* = one tying = 10. The ordinal numerals are:

Motu wa bo = The person who is first, or the first person.
" *bane* " four " fourth "
" *motoba* " six " sixth "
" *libwa* " nine " ninth "
" *mikangu mibale na wawi* = twenty-first person.

To use a word of another class we will take *elamba* = cloth.

Elamba ya bo = the cloth that is one, or the first cloth.
" *bine* " four, " fourth "
" *motoba* " six " sixth "

Elamba ya mikangu miatu na bibale = the cloth that is thirty and two, or the 32nd cloth.

The fingers are constantly used in counting. If a man wants to say thirty-four he will say *mikangu* (= tyings = tens) and hold up three fingers for those to whom he is speaking to say *miatu* (= three), *na* = and, hold up four fingers for them to say (*i*) *ne* (= four). The letter in brackets changes according to the class of the noun understood. By this means they ensure their hearers following and understanding them, and no one can afterwards plead that they did not hear the price properly, as any discrepancy between the number mentioned by the hearers and the number of fingers held up would be corrected at the time.

The way in which the Boloki folk use their fingers is somewhat irregular, and for the sake of clearness I draw two hands and number the fingers 1 to 10 — 1 to 5 left hand, and 6 to 10 right hand. 1 and 10 are the thumbs. The right hand is used more than the left.

One is expressed by doubling 6, 7, 8 and putting 10 over them, thus leaving 9, the index finger, standing alone.

Two, by doubling down 6 and 7 and putting 10 over them, thus leaving 8 and 9 standing.

Three, by doubling down 9 and putting 10 over it, leaving 6, 7, and 8 standing.

Four, by putting 10 at the bottom of the division between 7 and 8, that causes 6 and 7 to come forward a little, so the hand is turned about so that the two sets of two fingers may be clearly seen.

Five, the whole of the fingers of the right hand are left standing with the palm turned towards the person to whom you are speaking.

Six, by doubling down 2 on the left hand and putting 1 over it, so leaving 3, 4, and 5 standing, and doubling down 9 on the right hand and putting 10 over it, so leaving 6, 7, and 8 standing, thus making two sets of three fingers.

Seven, the same as 4 with the right hand and doubling down 2 on the left hand and putting 1 over it, thus making a 4 and a 3.

Eight, by working the right hand as under 4 and putting 1 at the bottom of the division between 3 and 4, and twisting the hands about so that the four sets of two fingers may be clearly seen.

Nine, by holding up the fingers of the right hand as under 5 and putting 1 at the division between 3 and 4, and twisting the left hand about to show the two sets of two fingers.

Ten, by holding all the fingers of the two hands with the palms towards the auditors, and every folding down of the fingers and re-spreading of them means another 10. *Second way* — by clapping the hands together, and every clap stands for 10. *Third*, and more frequent method — by holding out the fist of the right hand, and every decided shake of the fist stands for ten.

Eleven, by shaking the right fist and holding up one finger as described under one.

Twelve, by shaking the right fist and holding up two fingers as described under two; and so on.

The toes are very rarely used in counting. I have only seen them used when counting 20,000, and then the man stretched down and put the fingers of both hands on the toes of both of his feet and said: *mikoko mibale* = 20,000. Sometimes, when trying to give me an idea of vast numbers, they would say: "It will take all our fingers and toes to tell you," i.e., tens of thousands.

For addition and subtraction under 10 they use their fingers, but for higher numbers they use palm nuts, or anything suitable to hand. This is not because they are incapable of adding and subtracting mentally, but because they are so suspicious of each other that they want an ocular proof that the sum is right, and that neither one is getting the better of the other. Those who know figures and can run through their arithmetical tables accept each other's sums, but in transactions with the untaught they resort to the fingers and palm nuts for counting.

They always count by five and tens, e.g., if a person wants to make up 26 brass rods, he will take 3 rods and then put 2 with the 3 and push that 5 on one side, he will make another 5 in the same way, and then put the two fives together, making 10, and then make two more fives and put those together, keeping, however, the tens separate, then another 5 is made by the 3 and 2 process,

and at last 1 put down. Then the two tens are counted, and the 5, and lastly the 1.[1]

In contrast with the mathematics of the Borloki, is that of the natives of Central Australia, whose simple life requires only rudimentary forms of computation.

At Alice Springs (Central Australia) they (the natives) occasionally count, sometimes using their fingers in doing so, up to five, but frequently anything beyond four is indicated by the word *oknira*, meaning much or great. . . . Time is counted by "sleeps" or "moons," or phases of the moon, for which they have definite terms: longer periods they reckon by means of seasons, having names for summer and winter.[2]

3. *Science.* The science possessed by primitive man covers as wide a range and is nearly as voluminous as his "literature." An Agassiz would, perhaps, see little worthy of the name of science in these primeval gropings. Here are found, however, types of the first explanations — the first guesses of how the world was started, of how man learned his own humanity, and of how animals got their spots, their stripes, or their tails. Unfortunately, these early guesses became established as facts and satisfied all save the foolhardy questioner who was summarily executed, while his parents in shame took their own lives. Such as it is, this lore has to be learned — some of it incidentally, some of it amid the rigorous strictures and intoxicating frenzy of the initiation. These mixtures of childish fancy and adult grotesqueness are exemplified by the following passages.

[1] Weeks, John H. *Among Congo Cannibals.* Seeley, Service and Company, 1913. Pp. 339–342.

[2] Spencer, B. and Gillen, F. J. *The Native Tribes of Central Australia.* Macmillan and Company, 1890. P. 25.

How Human Beings Got Kneecaps

Once, long ago, a woman named Nka Yenge went fishing in the river. With her were many other women. They all went into the water, some down stream and some up. Now deep down in one of the pools a smooth white stone was lying, something like a Nimm stone. As the women went by, several of them said, "What a beautiful stone!" but when Nka Yenge came, she stood looking at it for a long time and said, "I wish I could get that stone!" When she came back she said the same thing, and as she passed a third time she said:

"I must have that stone."

Suddenly the stone sprang out of the water and struck against her knee. There it stayed and she could not loosen it; so she went home weeping with pain. On the way thither, she met a man, who asked, "Why do you weep?"

The woman could not speak for tears, but the stone answered, "I was lying in the water. When the woman passed up and down, she said that she wished to have me. Her wish was so strong that it drew me up out of the water. Now I have joined myself to her, and shall never leave her again."

The man was very sorry, and called to the woman, "Come here. We will go to my house, and I will try what I can do." When they reached his house, he got a strong knife and tried to chop off the stone, but it was no use. The stone had gone inside.

That is the reason why we have kneecaps. Formerly we did not have any.[1]

The science offered to the boys of the Boloki of Darkest Africa is summarized by Weeks, who spent thirty years (1881–1911) among these people.[2] Some Korean customs and notions as collected by Watters will be presented after Weeks's summary.

They picked up a little astronomy from their elders. Venus was called "wife of the moon"; a shooting star was "fetish fire";

[1] Talbot, P. A. *In the Shadow of the Bush.* George H. Doran Company, 1912. P. 394.

[2] Weeks, *op. cit.*, pp. 141–142.

a cluster of stars (Pleiades) was a "crowd of young women"; the "Milky Way" was "the road of floods and drought." Both on the Lower and Upper River the natives connect the "Milky Way" with the abundance and scarcity of rains; they say that when the "Milky Way" is bright, clear, and well seen there will be plenty of rain. Three bright stars in Orion's belt were named the "three paddlers"; and the five stars near each other in Orion were regarded as the "bundle of thunder or lightning." In the constellation Lepus there is a set of five stars thus

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* *

, and these were said to resemble a man — the top star being the head, the two lower stars the hands, and the two bottom stars the feet. When this set of stars, called *kole*, reached the meridian the natives did more planting than at any other season. This *kole* was so well recognized by the natives that we used the word as an equivalent for our word year.

There is a legend that the moon was once a python and made a road for itself on the earth. Some adventurous trappers, however, snared it, but on noticing there was no more moonlight, they let it go, whereupon it sprang into the sky and never again returned to earth. When there is no moon, some say that the python has gone on a long journey, and others that it dies every month. There is much shouting and gesticulating on the appearance of a new moon; and those who have enjoyed good health ask that it may be continued, and those who have been sick ascribe their complaint to the coming of the new moon, and ask it to take away bad health and give them good health in its place.

Here, as on the Lower Congo, many believe that the sun returns from the west to the east during the night to be ready to rise in the morning. They were taught that the stars were a species of large fire-flies that formerly existed on the earth, but have now gone into space, and that the comets are signs that a great chief has recently died.

Another thing necessary to the young Congo boy was to teach him, not the movements of the clock's hands, but the crowing of the cocks, the notes of the *nkuku-mpembe* (name of a bird), and the movements of the sun: 2 A.M. was "the lying fowl"; 3 A.M., "the lying bird" — because they falsely heralded the dawn which

was not due until later; 4 A.M., was "the first fowl"; 4 to 5 A.M. "the sun is near"; 5:30 to 6 A.M., "the dawning"; 6 A.M., "the sun is come"; 6:15 to 7 A.M., "the first sun"; 12 noon "the meridian"; 6 P.M., "when the fowls go in," or "the sun enters"; 11 to 12 P.M., "one set of ribs," or "one side of a person," and means that about that time a person turns from lying on one side over on to the other. For all these and many other divisions of the day there were special names or phrases.[1]

Some Korean Customs and Notions

On the 14th and 15th days of the first month of each year, every man and boy in Söul, the capital, walks over three particular bridges in succession. By doing so, exemption from pains in the legs and feet is procured for one year.

There is another curious custom in Corea in connection with the above-mentioned days. All men and women born under the Jen or "Man" star make certain straw images on these days, especially on the 14th. These images are sometimes dressed with clothes, and each one contains a number of the copper "cash" constituting the currency of the country. There ought to be as many "cash" in an image as the person making it is years old, but the rule is not strictly followed. When the images are complete they are placed on the path outside of the house, and the poor people seize them and tear them up in order to get the "cash" which they contain. The destruction of the image, or figure, saves the person represented from death for ten years. It is, accordingly, only once in ten years that the ceremony must be performed, but it seems to be observed every year, at least by some.

Smallpox is supposed by the Coreans to be the work of a malevolent demon, and hence its name among them, *viz.*, Ok-Sin or Plague-God. When a child dies of smallpox its body is not buried, but is tied up in straw and hung on the city wall in Söul or from a tree. The body is thus hung up because it is believed that there is a chance of the spirit which had left it returning to it again. But some say that the deceased child is thus hung up in order to secure a longer life for the next-born. It is chiefly daughters, I believe, whose dead bodies are treated in the manner here

[1] Weeks, *op. cit.*, pp. 141–142.

indicated. The custom is explained as having arisen from an actual occurrence. One one occasion a young girl died in Söul and her parents were unable to bury her. They wrapped her up in paper and left her hanging from the city wall above the reach of beasts of prey. During the night a poor man, who had taken shelter near the spot where the corpse was hanging, heard it utter sounds. He found the body reanimated, took the girl down, and made her his wife.

If a younger brother dies of smallpox in a family in which there is an elder brother, the deceased may not be interred until after the lapse of thirteen days from the date of death.

The moon of the 15th of the first month is carefully and anxiously observed by the Coreans in order to obtain prognostics for the year. If the moon is what is called "thin," that is, dull and pale, the year will be a bad one. The crops will fail, trade will be bad, there will be much sickness, and things generally will go wrong. If the "thinness" is only partial, the misfortunes will be confined to the districts lying in the direction of the "thin" part.

The 15th day of the first month is also the day specially set apart in Corea for the worship of ancestors with much solemnity and formality. On the morning of this day also all the members of the family meet together for a wine-drinking ceremony. On this one occasion the youngest member of the household, whether boy or girl, takes precedence in drinking. By doing so, it is believed, the child is secured against ear-ache for a year.[1]

4. *Social studies.* Primitive boys, like the youth of America, have to learn by precept and example the simple art of living together. Much that America regards as amenable to ethical principles rather than to statutory laws has to be enforced among primitive peoples by stern regulations with bitter penalties. Much that seems too trivial to teach in a formal manner to occidental boys is, therefore, given all the pomp and circumstance of elaborate tribal ceremony. One's notions of primitive life may lead one to

[1] Watters, T. "Some Corean Customs and Notions." *Folk-Lore*, VI, pp. 82–84. 1895.

suspect that the social studies of primitive boys are simple, and, consequently, one may scoff at the possibility of primitive peoples' having as definite civics materials as modern man has; in that case let the scoffer turn to the accounts written by witnesses of the rites of "simple" tribes and find the discipline he craves for manhood in the making.

The passages which follow show by implication some of the civic problems which primitive man faces and the manner in which those problems are solved: old men, not caring to exert themselves unduly, require youthful hunters to bring their kill to camp before partaking of it; as tribal welfare is not compatible with neglect of initiatory training, all well-bred boys are not only marked by physical means, but are also given verbal formulæ by means of which they can expose impostors; sexual morality not being otherwise insured is enjoined by formulæ, group censorship, and religion; women, being quite as robust as men, require the restraining influences of mystery and the bull-roarer. For such reasons and many others, boys must study community civics. During the period of initiation the boys often receive training at the hands of one or more of the elders; at this time it is that the youth of Torres Straits are taught the elements of conduct. During the period of seclusion the old man, as sponsor or tutor, trained the novice in tribal lore and customs, including instruction in morality. The following is a literal transcript of the code of morals as given by the tribesman, Maino:

> You no steal. You no take thing belong another man without leave; if you see a fish-spear and take, s'pose you break it and you no got spear, how you pay man? S'pose you see a dugong harpoon in a canoe and take it, and man he no savvy, then you lose it or break it, how you pay him? You not got dugong harpoon.

Look here! S'pose man tell you do something, you do it quick. S'pose man ask for *kaikai* (food) or water or anything else, you give him half what you got. If you do, you good boy, if you no do, no one like you.

You work hard to get plenty fish and dugong and turtle. You make garden then you full-up of food. S'pose you get plenty fish you give mother and father before you give to brother, you have wife give her a little and plenty to parents for they have had hard work along you. Look after mother and father; never mind if you and your wife have to go without. Give half of all your fish to your parents, don't be mean. Don't speak bad word to mother. Father and mother all along same as food in belly; when they die you feel hungry and empty. Mind your uncles too and cousins.

You no go and talk a lie; you speak straight.

S'pose man talk to your brother you help him, too, you talk, too. If your brother is going out to fight, you help him; don't let him go first but go together.

You no play with small play-canoe, or with toy-spear; that all finish now. You no play with boy and girl now; you a man now and no boy.

You no like girl first; if you do, girl laugh at you and call you a woman (that is the young man must not propose marriage to a girl, but must wait for her to ask first). You no marry your cousin; she all same sister. You no marry sister of your mate or by and by you will be ashamed; mates all same brothers (but "mates," i.e., two close friends, like brothers, may marry two sisters).

Finally the *kernge* (novice) was instructed about dealings with women. The characters of various girls were made known to the youths so that they might be forewarned. The *kernge* were also taught by the *wadwam* sponsor the following magical practices in connection with women so that the latter might fall in love with them: Spear the ground where the woman, or women, micturate and call her, or their, name when pulling out the spear. Mix "Medicine" with tobacco and give to the girl. Mix the medicine with sand and put it on the sand where the women are going to sit round the fire. Put "medicine" on the palm of the hand, and plenty behind the ears and the back of the neck, a little on the

nose and plenty in the armpits, on the pubes, under the knees and on the feet. I could not get any of this "girl medicine," it was a scented substance and I think it was mainly — if not entirely — *paiwa* bark.

At the expiration of the month's seclusion the drums were beaten and the *sobera* removed from the *kernge*, who were washed in the sea, leaves of the *sarza* and *urakar* trees were gathered and the boys were rubbed with these together with some sand, until they were clean and light-colored.

"My word, boy very clean," said Maino on one occasion; finally they were anointed with coconut oil and "plenty girl like him."[1]

The hunting and fishing regulations of certain African tribes are favorable to the old men of the communities. As these tabus must be diligently kept, the boys are required to master them. Talbot reports the following tabus:

There are many strict laws and tabus (Ntubi) which regulate the distribution of animals killed in the chase.

After a town hunt, one fore and one hind leg of each beast killed must be given to the townsfolk. The neck becomes the property of the man who stood nearest during the kill, the tail belongs to the mother of the hunter, one leg and the back to the father or the head of his house, while the head and remaining fore leg are left to the actual slayer.

When a man hunts alone or with one companion, the rules vary according to the animal killed.

In the case of a boar, the tail is given to the mother, the two legs and trotters to the father or head of the house, but he usually returns the latter. The cheeks and jaws must be cooked for the hunter's age class; half of the head and the stomach is given to the wife, and the other half-head to the companion; leaving the two fore legs to the man himself.

Both water chevrotain and bay duiker must be taken whole before the head of the house, who returns all except the two hind legs. Much the same rule applies to Ogilby's duiker, except that

[1] *Reports of the Cambridge Anthropological Expedition to Torres Straits.* Vol. V. *Sociology, Magic and Religion of the Western Islanders.* Cambridge University Press, 1904. Pp. 210–211.

this is always taken to the hunter's father. Should the latter be dead, there is no obligation to offer it to the head of the house.

The rules about porcupine, blue duikerbok, and monitor flesh are similar, but not so strictly kept.

Elephant, buffalo, yellow-backed duiker, pangolin, civet cat, and genet must also be brought before the head of the house.

Should these rules be infringed, a Juju will catch the hunter and give him a sickness, from which he will not recover except by confession and sacrifice. In the case of a genet, the illness is supposed to take the form of elephantiasis. . . .

Should a man keep to himself a male drill ape or chimpanzee, certain death is supposed to follow, and an illness from which recovery is unlikely, if the kill be female.

When a leopard or python is killed, the heart and gall are cut out, buried in a deep hole, and the earth beaten over them. Anyone eating of these would die. Only slaves eat leopards; for free men they are tabu.

Of birds, the Monkey-killing Eagle and the Greater Plantain-eater must be taken to the head of the house.

Neither man nor woman may feed on any scavenger bird, such as the vulture, nor on the owl, because it is a witch's familiar. If killed, the latter must be offered up on two posts at the entrance to the town. The Kingfisher also is forbidden food. When killed its skull is dried, powdered, mixed with leaves and given as cough medicine.

Members of the Juju Mfam are forbidden to eat the bird called "Aru."

Many persons may not eat the fish called Ecchan or Mbonn, the heads of which are ground up and used as "medicine."

Of tabus for men alone, the principal ones are — the fish Eddokk, of which, should a hunter eat, he will be killed in the bush, and crab, "The Father of all Jujus," the eating of which would cut a man off from partaking in any ceremonies.

A woman may not eat the following: "nandinia binotata," as a child born afterwards would surely die; wild cat, lest she should become barren; anything killed by leopard or wild cat, otherwise her child would be still-born; crocodile, as her child would be born with a scaly skin and die; the Greater Plantain-eater; the first thing caught in her husband's new trap.

The greater number of these tabus probably arose from totemic causes, others from sanitary reasons, and some, obviously, from the desire of the old men to obtain a full share of what was killed by their juniors.

One day, Obassi Nsi called all the people on earth together. He said, "I make a law concerning the food which is proper for you. Of the fruits of the earth you may eat, both men and women, but of living creatures women alone may eat fish, and men only may eat the flesh of animals."

Now there was a woman named Aiya Ita, who had a husband named Atu Utup (Efik word for hunter). One day each of them went out, she to the river, and he to the bush. After she had been fishing for a little while she caught a fine fish. This she took home and boiled in her pot. When it was done, she ate some of it, and some she left for the morrow.

In the evening Atu Utup came home. He had hunted all day, but had killed nothing, and was very hungry. He saw the fish which his wife had left, and he took a piece and ate it.

Now a bird came out of the bush, and settled on the branch of a tree which grew close to the house. Through a small hole in the wall he saw what the man had done. At once he flew away to Obassi Nsi, and told what he had seen.

Obassi sent for the hunter and said, "You have gone against the rule which I made, that no man should eat fish. Therefore, you must die."

After the man was dead, Obassi thought, "The rule that I had made is too hard for my people." So he sent and called them again before him, and said:

"From to-day I remove the law. Men may eat fish. Women may eat meat. Only let no woman eat the genitals of an animal slain by a hunter. Should she do so, the hunter will never be able to kill again, unless he finds out from the charm who it is who has transgressed my law and makes due sacrifice, that the curse may be taken off him."[1]

The boys of the Thonga tribe of South Africa are taught how to undergo the six main trials, — blows, cold, thirst, un-

[1] Talbot, *op. cit.*, pp. 407–409.

savory food, punishment, and death. Besides such training Junod reports that these boys are also taught the formulæ of their tribe.

Every morning the candidates are brought together to the place of the formulæ "nau-milau, law, prescription." There is a tree in the midst of this square. A special instructor, whose father has already exercised this function, climbs on the tree and begins to teach the boys. He says:

"Little boys, do you hear me. I say. . . ."

Then come the words of the secret formulæ which are a great taboo and which they must learn by heart, sentence after sentence. I have collected some of them, Thonga and Pedi. Here I will only reproduce the Thonga. They are partly incomprehensible, even to the initiated. The first one is called *Manhengwana.* It is the name of a bird. (Junod gives the original in native language; only the translation is here reprinted.)

The little bird has sung.
It has stirred the handles of the lances which are like lions. . . .
They pierce each other. . . .
The bird. . . .
Forged at the lodge.
? in the sand. The great sand of the ploughmen. . . .
The running of the wild pig. . . . Of the frog which cries. . . .
They are walking in good order, they go to visit the mysterious hut.
They find it like the twisted rings of the adder.

As far as they have sense, Junod says that the words of this formula seem to extol the tribe and its lodge. The opening lines indicate that the bird of winter heralds the opening of school. "The running of the wild pig" is the life of the boy who was idling on the spot till the initiation makes a man of him. "The croaking of the frog" is his childish stupidity. By the rites of the initiation he will become like this frog, an invulnerable and untamable adversary. In the last lines are portrayed the circumcised

boys, penetrating into "the mysterious hut," and wondering at the extraordinary wisdom which is found there. The laws, rites, and trials are like the inextricable intermingling of many snakes. Still further mysteries are next unfolded to the boys.[1]

These formulæ and others like them constitute the principal passwords by which the initiated recognize one another. There are also formulæ which refer to such matters as marital relations and hunting expeditions. It is clear from these examples that the boys of this tribe thus acquire little except charm words and that the training does not rationally explain the problems of social life.

5. *Religion.* It was the sound of the bull-roarer that announced the opening of the secondary school which was described freely rather than literally in the opening paragraph of this chapter. The bull-roarer itself, the alleged supernatural origin of its sound, its significance to the women of the tribe, and its different significance to the men of the tribe are shown in the accounts which follow. The religious or even the magical aspects of the bull-roarer are not always clear in the accounts of its use. That this simple instrument has a fundamentally religious significance is clear from the observations of witnesses of primitive ceremonies. As Marett says, following the anthropologist, Tylor: "I have to confess to the opinion with regard to *Daramulun, Mungan-ngana, Tundun,* and *Baiamai,* those divinities whom the Kurnai, Murrings, Kamilaroi, and other Australian groups address severally as 'Our Father,' recognizing in them the supernatural headmen and lawgivers of their respective tribes, that their prototype is nothing more or less than that well-known material and inanimate object,

[1] Junod, H. A. *The Life of a South African Tribe.* David Nutt, 1912. Vol. I., pp. 85–86.

the bull-roarer." [1] The following account is drawn from Spencer's report of a ceremony which he witnessed, and which had religious significance to the natives who participated.

The following account was given to me by an old man who was well acquainted with what formerly took place, and . . . I was able to watch a representation of the performance of a part of the ceremony during which the sacred bull-roarers, called Bidu Bidu by the Larakia, are shown to the initiates. As in the case of the Melville and Bathurst Islanders and the Kakadu and allied tribes on the mainland, the Larakia ceremonies do not include any mutilation of the body.

There are two grades of initiation admitting a man respectively to the status of Belier and Mullinyu.

The Belier ceremony was, apparently, held once every year at a time decided upon by the old men, who also determined what youths should be initiated at any given ceremony, though all men of the rank of Belier, Mullinyu, and Lariba knew what was taking place.

As usual in such circumstances, the opening of the ceremony, which is called Makulauri, is marked by the holding of an ordinary corrobboree at which all members of the local camp, as well as visitors from other tribes, are present. At this corrobboree the selected youths are picked out by the old men and given into the charge of special guardians, who are called Birra-pirra-pirra. As soon as the corrobboree is over the youths are taken out into the bush by their guardians, the women, from under whose control they are now passing, weeping and wailing.

A camp is made out in the bush and here the boys are kept, except that every now and then they are taken to the main camp and shown to the women, but no intercourse of any kind is allowed with the latter, who are carefully watched over by certain old men, told off for the purpose. The youths, meanwhile, are allowed to eat but little and are even supposed to give to their guardians a part of the small supply of food with which they are provided.

[1] Marett, R. R., *The Threshold of Religion.* London, 1914. P. 17. Also see this author's article entitled "Savage Supreme Beings and the Bull-Roarer," in *The Hibbert Journal*, VIII, 394–410. January, 1910. This article cites valuable bibliographical references.

The old men tell them that, if they eat much, some one will come up and kill them during the night, and that they, their guardians, will not prevent this from being done or be angry with the doer. They are continually instructed in tribal customs and are told, time after time, that they must not steal, must not interfere with other men's lubras, but must imitate the old men. They are made to sit down quietly, are continually hit with spear throwers, and kicked and cuffed so as to hurt them a great deal, but, whatever may be done to them, they must on no account show any resentment or they will be still more seriously dealt with. This is supposed to have the effect of making the youth a "good" black-fellow. During this period, also, the guardian cuts the Belier on the chest so as to make the two raised cicatrices that are the mark of a Belier.

When they have been a considerable time in the bush the youths are brought back and led to a special camp in the scrub, hidden from the sight of women and strangers. First of all they are made to sit down in a row on the ground with their faces turned away from a space that has been cleared in the scrub, in which the important ceremony of showing them the sacred bull-roarer is to be enacted.

A young man who has attained the status of Belier is now in charge of each youth, lest he should feel frightened and run away. The old men, four or five in number, who must have reached, at least, the status of Mullinyu and who are to swing the bull-roarers, go away into the bush where the youths cannot see them and paint themselves. The bull-roarers are thin flat slabs of wood from a foot to eighteen inches in length. They are two or three inches in greatest width, are rounded at one end and truncate at the other, through which a hole is bored for the attachment of three or four yards of string. They are ornamented with alternate lines of red and white.

The old men emerge from the scrub so that they cannot be seen by the youths, who have their backs turned to them. Their eyes also are covered by the hands of the Beliers in charge of them. Out in the open ground the men begin to swing the bull-roarers round and round, gradually approaching the youths as they do so. The latter are supposed to be very frightened, because they, like the women and children, have been taught to believe that the

sound is the voice of a great old man who has come to take them away into the mangrove scrub.

Suddenly their guardians turn the boys round, take their hands away from their eyes and tell them to look at the old men whirling the Bidu Bidu. They stand up and for some time the whirling goes on, the youths watching in silence. Presently the old men come close up to the boys, who stand in a row. Each old man, holding one of the Bidu Bidu, comes up to a boy and stands in front of him. First of all he rubs the stick through his own armpit and then across his stomach. If he did not do this, it is supposed that the strong magic of the Bidu Bidu might enter the boy's body and cause him to swell up. He then rubs the stick through the boy's armpit and pokes his stomach with one end of it, after which the boys are told to hold out their hands and the sticks are placed on them. Each one is told that it is Bidu Bidu, that the noise is not a voice, but is made by the stick, and that on no account whatever are the lubras to see the sticks or know anything about them. Meanwhile the boys are told that they may take the sticks, which will help them to catch fish and secure food. They carry them about in the scrub, avoiding the women and children, for two or three months, after which they are completely destroyed by fire, no trace of them, string or wood, being left.[1]

Further beginnings in religious instruction were witnessed by Howitt,[2] who describes the awe-inspiring scene in which the boys are introduced to the deity and the rigorous religious and moral pronouncements of the deity. This deity, the *Daramulun* referred to above in Marett's comment, is a fearful being whose name can be lawfully spoken only in sacred places. Much of the ritual is performed so that *Daramulun* will look with favor upon the boys. As a crude representation of this deity is a part of the initiatory surroundings, the

[1] Spencer, Baldwin. *Native Tribes of the Northern Territory of Australia.* Macmillan and Company, 1914. Pp. 153–156.

[2] Howitt, A. W. *Native Tribes of Southeast Australia.* Macmillan and Company, 1904. For a reprint of an account of initiatory rites, see W. I. Thomas, *Source Book for Social Origins.* (University of Chicago Press, 1909), pp. 212–234.

boys conduct themselves circumspectly, because *Daramulun* is cognizant of all these ceremonial proceedings. Although the teachings, mainly tabus, of this deity are to be observed throughout life, no representation of it is permitted within the tribal camp; as Gunjerung warned the boys near the close of the ceremony, "If you make anything like that when you go back to the camp, I will kill you."[1]

Although the activities just described may not impress all students as quite religious, the indisputable fact remains that the natives themselves so regard them. The literature of primitive peoples is replete with accounts of analogous beliefs and practices.[2] The native boy or girl who is tempted to disregard the "higher powers," spirits, or magic of his tribe has only to recall the solemn warning of Gunjerung. If the fear-inspiring practices of these peoples are thought to be crude and incompatible with the moral and æsthetic practices and beliefs common to other religions, let it be remembered that the examples here cited are drawn from tribes which have only approached the "threshold of religion."

6. *Fine and applied arts.* The art of primitive man has been carefully studied by anthropologists because it indicates so much of the status of his culture. If this section were devoted to primitive art in general, there would be great difficulty in choosing from a wealth of material which is most truly representative. As the purpose of this section is to portray briefly the place of art in the education of primitive youth, there is difficulty in finding any suitable accounts which indicate clearly how training in art work is offered. The art of primitive tribes is, of course, restricted by the stereotyped activities of their dwarfed lives. Typical

[1] Howitt, *op. cit.*, p. 543.
[2] See references at the end of this chapter.

activities of this kind are body decorations; decorations on wearing apparel, weapons, and other instruments; and drawings such as those executed on rocks.

During their initiation the boys of Central Australia participate in elaborate ceremonies in which body paintings are impressively displayed. The boys also witness the actual painting, as shown in the following account of the closing rites of the initiation.

In the Engwura camp it was a busy and also a picturesque scene. The leader had, during the day, consulted the older men who were especially associated with him, and it had been decided what brands should be painted on the various young men. Each brand was distinctive of some special totem, but the most striking point in connection with the painting was that the brand of any particular individual had no relationship of necessity to his own totem, or to that of the man who painted him. It was purely a matter of what the old men, and especially the leader of the Engwura, decided upon. The following cases will illustrate the point:—

A Panunga man of the snake totem decorated an Umbitchana man of the plum tree totem with a brand of the frog totem.

A Kumara man of the wild cat totem painted a Bulthara man of the emu totem with a brand of the kangaroo totem.

An Appungerta man of the witchetty grub totem painted an Umbitchana man of the wild cat totem with a brand of the Hakea totem.

A Kumara man of the little bat totem painted an Appungerta man of the bandicoot totem with a brand of the frog totem.

A Bulthara man of the wild cat totem painted a Purula man of the native pheasant totem with a brand of the same totem, this being the only instance in which a man was painted with a brand of his own totem, and the old men said that there was no special reason for its being done in this special case.

A Purula man of the emu totem painted an Uknaria man of the lizard totem with a brand of the frog totem.

For this strange want of relationship between the totems of the men who did the decorating and those who were decorated, and still more for the total absence of any between the man who was

decorated and the totem with a brand of which he was decorated, we could find out no reason whatever. Certainly the natives have no idea why it is so.

The materials used in the painting were charcoal, red and yellow ochre, white pipeclay and wad. In some few cases bands of wad edged with white down were drawn on the chest, but in almost all cases the totemic brand was confined to the back, so that, as the *Illpongwurra* might neither speak to, nor in the presence of, their *ab-moara* men who were doing the painting — a rule strictly observed during the decorating — none of the men, unless they could detect it by the feel, were aware of what design they were personally branded with, though each one could of course see the brands on the other men.[1]

An even cruder form of art is the body decoration which is sometimes referred to as tattooing. As no ink is used in this decoration, certain anthropologists object to the term "tattoo" in this connection and use instead the term "cicatrice." Weeks describes briefly this practice of decorative scarification.[2]

Tattooing was begun in earliest childhood by the parents, but not more than sufficient to show that the child belonged to the tribe. Later on the boys and girls were urged to cut their own tattoos, and were taught to bear the pain unwhimperingly. I have seen boys and girls sitting by the river's edge summoning up the necessary courage to make the incisions, and when they failed to do so they were ridiculed by the others until at last they would run the knife, by the aid of a bit of looking-glass or the reflection in the river, along the old lines in the forehead. At the age of 18 or 20 the person — man or woman — who wished to be thought fashionable would work away every week or so, cutting the flesh deeper and putting wads in the cuts to cause the flesh to stand up, until they had a veritable *likwala*, or cock's comb, which would be the envy of those who had not attained to such a fine decoration.

[1] Spencer, Baldwin and Gillen, F. J. *The Native Tribes of Central Australia.* The Macmillan Company, 1899. Pp. 376–378.

[2] *Op. cit.*, p. 140.

These peoples who stand at the threshold of art possess many highly decorated specimens of wearing apparel, charms, weapons, musical instruments, wallets, and bags. As certain tribes and certain persons specialize in the making and decorating of one or more of these articles,[1] it can reasonably be assumed that some form of transmission of skill is early entered upon by the young members of the tribes. As the work of these peoples is generally conducted in open view of all, the opportunity for observation and imitation of adults is far greater than among more complex social groups like our own.

The applied arts, which are regularly taught by means of transmission from father to son, or to other near relatives, consist of making string wearing apparel and ornaments, weapons, utensils and implements, musical instruments, baskets, mats and so on. Many of the arts are carefully guarded against interference or too wide usage. For example, the Congo cannibals of the last generation held the smith in very high estimation, and thought that he required not only skill and wisdom for his work, but that he also practiced witchcraft. Consequently, no one was allowed in any way to interfere with the smith's work by stepping over his furnace, by blowing it, or by spitting into it, because, by thus polluting the fire, any of these actions would cause bad workmanship. This workman taught his son or his nephew, but would accept no apprentices.[2]

7. *Physical education.* For the good of the tribe, physical education has long been a matter of grave concern. None but the fit were encouraged to continue their existence, and for these severe ordeals and training were provided. A portion of this training consisted of cultivating a stoical indifference to pain; other features of the training seem to

[1] Spencer and Gillen, *op. cit.*, p. 575. [2] Weeks, *op. cit.*, p. 90.

have been conducted for the purpose of physically "hardening" the youth; still others seem to have had for their purpose the selection of the fit by means of eliminating the unfit; finally, the dances seem at times to have had some connection with physical exhilaration for the coming trial of prowess.

Examples of some of these forms of training have already been cited: the self-scarification or cicatrizing provides formal training in withstanding pain; the exposure to blows, to cold, to extreme thirst, to a diet of only unsavory food, to punishments, and to other rigors approaching death,[1] probably serve at once to harden the fit and to eliminate the unfit.

The place of the dance is most forcefully illustrated by its use as a preparation for battle. The true war dance consists of the representation of deeds of valor by warriors who have killed an enemy in battle.

The massed chorus of the guba is most imposing, but still more deeply does the *gila* impress one by its wildness. Look at this elderly man who suddenly detaches himself from the circle, stamping with all his might on the ground. His feet beat the earth in cadence, one blow being long, the three following ones short: —⏑⏑⏑. He goes on, making the ground shake, brandishing his weapons with all his strength, perspiring from his efforts and pronouncing Zulu words which the throng interrupts by wild shouting, as if to encourage him. . . . Then he returns to his place and the whole army concludes the performance by a kind of whistling: *zu* . . . *iiiii* . . . prolonged on a high and piercing note, which suddenly descends to a deep and guttural tone: *i* . . . *aaaa* . . . He has hardly resumed his place in the ranks when a young man springs into the circle, jumping like an antelope, holding his assagai and gesticulating all the while, as if transfixing an invisible enemy. His eyes are glaring as if he were a wild beast, and immediately the army intones a song, his song, the one which has been

[1] Cf. Junod, *op. cit.*, vol. I, pp. 80–84.

composed to glorify his deed. Possibly his return to the ranks will be greeted by another shout: "*I . . . a . . . Nda-u! — Lion!*" comparing him to a lion returning to his forest and which nobody will dare to attack. The encouragement given by the warriors to the *bagili* and their final cry are called *khuza* or *khunzela*.

"At that very moment," says Mankhelu, "the hearts of the young men tremble in their breasts! Their hair stands on end. . . . An extraordinary war spirit comes over them all." . . . And every one having witnessed those performances in the Thonga or Zulu mukhumbi will confess that they are wonderfully impressive. It is a mixture of dramatic, epic, and lyric poetry, three literary *genres* which are still confounded, the whole being enhanced by a deep, wild music and subject to the laws of a certain artistic style.

The fighting instincts are excited to the highest pitch by these patriotic choruses and dramatic representations. Thus should the troops be slow in making a start, the young men go dancing to the chief and beg him to "grant them permission" to go forth and slay, or rather to "give them men" to slaughter (ku nyika). The native idea appears to be that the chief holds the lives of the enemies in his hands: without his permission they cannot go forward, but, this once given, they rush enthusiastically to the fray. They even go so far as to taunt him with being an old woman, a coward, because he will not let them go at once.[1]

When this stage of excitement is reached, the war-medicine is applied and the son-of-battle goes forth to war.

More joyous forms of physical education are found in the games. Among the Congo boys three favorite games are "The Pig Eats Mealie Cobs," *Homane*, and *tlhuba holwane*. Somewhat similar games are found everywhere. In the first of these games:

one child plays the part of the pig; crawling along, covered with a mortar and piece of cloth, he goes from one hut to another followed by the throng of his friends who clap their hands and sing the foregoing words. People give food to the pig. It is received by

[1] Junod, *op. cit.*, vol. I, pp. 437–439.

its friends. When they have visited all the yards, they assemble on the central place of the village and eat the food together. Sometimes the pig suddenly turns back and attacks his followers who flee in terror. . . .

The game of *homane* is very similar to the English hockey. The fruit of a palm tree, which is round and very hard, is used as a ball and hit with a stick into the opposite camp. If the *homane* falls between the two camps, the players rush upon it and, with their sticks, try to send it into their opponents' quarters. . . .

In another boys' game, the *tlhuba holwane*, which is played mostly by moonlight, they also take two sides. A stick is planted by the one side in the earth and a piece of charcoal placed upon it. One of the opponents comes, hopping like a frog, takes out the stick and still hopping goes and plants it in his own ground. If he reaches the goal without falling, he has won. An opponent will take his turn, pull out (tlhuba) the stick and bring it back to his partners. Evidently the Ronga children find this comical![1]

Primitive practices as the threshold of modern curricula. In concluding the discussion of primitive education, it seems desirable to warn the reader against accepting the specific practices and subject matter described in the foregoing pages as necessarily typical. The initiation is a typical custom — it varies, however, from tribe to tribe; tests of endurance are typical, but the specific tests vary among different tribes. Like the educational development of the American colonies, wherein each colony had certain general practices, but differed in many respects from most other colonies, so the education of each tribe exhibits certain general characteristics, but differs in many particulars from most other tribes.

We have dignified primitive lore by the term "course of studies" and have proceeded to divide this course into eight branches. This procedure was adopted merely for the purposes of achieving clearness and brevity. Perhaps another

[1] Junod, *op. cit.*, vol. I, pp. 66–67.

writer would classify primitive subject matter differently. Certainly, the primitive man did not so classify his material. We are, however, definitely looking for the origins of our own curriculum. Some of the origins have been definitely located by means of our procedure. It is to be hoped that the notion of the threshold of the curriculum will be retained in the reader's interpretation of the preceding pages. Were content, such as that described, now seriously proposed for modern youth, objection might well be made; yet a beginning had to be made — the germs of culture are here shown.

It is clear not only that much of the teaching of primitive boys is conducted by the old and influential men of the tribe, but also that it is of such a character as to impress upon youth the importance of meeting the physical needs of these men. While it may, therefore, be said that the training of boys is for the good of the tribe, it can more certainly be said that the training is for the good of the elders. In any case, important consequences follow this kind of training: the solidarity of the tribe is insured, conservatism rules, crabbed age thrives though youth may suffer.

Whatever one's philosophy of personal or of group life, one cannot but be impressed by the thorough immediate utility of tribal teaching. The tribal philosopher may favor change, but he is at once halted even in his thoughts by the grim vision of gods and men in a deathly attack upon him and his people. He knows that continued existence under a settled regime is likely if not certain. Why, then, turn his back upon the passably good when nothing save evil lies in the direction of change? But the urge for variation is not, we are assured, very strong among boys whose initiative has been well-nigh quenched in youth — or, at anyrate, originality in social and political matters is lacking in primitive men who have been thus nurtured. Perhaps the

stronger minds find a safer adventure than political originality by turning their attention to the arts and crafts and story-telling. Certain it is that primitive man, like some of his descendants, has little time for the untried, the dreamer's vision, the unsafe. So it happens that the primitive teaching is immediately practical because it preserves the tribal solidarity and the tribal lore, arts, and customs which underlie solidarity. Before severely criticizing these practices, one should consider some of the certain results of individual or group variation in an age that is quite without the knowledge possessed by Europe for over twenty-five centuries.

Alongside the training for the arts of life, was training which included the products of the imagination of these men who lived in an age of wonder. Indeed, their science was like ours as far as beginning with what was only dimly felt is concerned; unlike our men of science, however, these pioneers did not test thoroughly, but instead decreed the truth of a guess. The consequence of this acceptance of a guess was a story or legend or myth to support the explanation of the work of nature or of man. Instead of true elementary science, many stories or folklore are the reward or the penalty for guessing without testing. When one looks for the imaginative literature of primitive tribes, one finds, therefore, a strange mixture of science, art, literature, philosophy, civics, and history. This lore together with works of art aids one in judging both the cultural level of the tribe and the cultural value of the tribal curriculum.

That much or little of the folklore was acquired incidentally affects not at all the final result. The fact is that it was acquired and transmitted. As compared with the modern high school, primitive institutions offered little. That a beginning was made is clear. That premature standardization appeared as an obstacle to progress is equally clear.

The remainder of Part I will supply some of the connecting links between this primitive beginning and the curriculum of the modern American secondary school.

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CHAPTER II

GREEK SECONDARY SCHOOL CURRICULA

The place of the Athenian Age in the history of curricula. Many years before the age of glory which we now approach, man hurled questions at his tribal gods and, while waiting for an answer, found himself, an individual. And nevermore could priest or pagan god claim all that all men had. A Greek had come to show a sodden or, at best, a narrow, practical world what is meant by living man. Prehistoric man had kindled the fire of human living — dimly had the smothered embers shone; the Greek blew these smouldering embers into flame. From human blindness to clear vision leads the course from primitive man to Greek; from brutalizing tests of animal endurance to ennobling tests of mental insight; from unvarying, restricted group life to personally responsible civic conduct; from guidance by blind gods to leadership by men who far transcended tribal gods — such is the transition from the life and thought of primitive man to the life and thought of the Age of Pericles.

In making the transition from an age of prehistoric rudeness to an age of Athenian grace, the studies that made men of boys changed no less than did the general forms of life and methods of instruction. By passing from present-day primitive practices, which are not unlike those of prehistoric peoples, to those of Athens, one accents the sharp contrasts among curriculum practices as well as the contrast between cultural levels. By tracing outstanding changes during the Athenian Age, one finds additional contrasts and

characteristics of a progressive era. These contrasts and characteristics constitute the foundation of this chapter. Their special importance lies in the fact that this period was one of continuous curriculum reconstruction as well as an era in which many practices of early man were dropped. For all succeeding eras of progress this age is, consequently, a significant period.

Free use was made in the opening paragraphs of Chapter I of the term primitive, so that the term connoted life which is culturally rather than chronologically antecedent to the life of pre-Christian Greece. The period of Greek life selected for this sketch is likewise relatively extended so that it includes Thales of the sixth century and also Archimedes of the third. As far as the forming of the curriculum is concerned, this four-century period covers the true Athenian Age, even including the first publication of Homer's poems.[1] Athenian education is selected for this sketch because, educationally, it is the most important of all Greek systems.

Greek education of this period was a course of training which began at the cradle and continued, for boys, well into manhood. Not all boys were endowed with sufficient wit or funds for such extended training. Only boys who caught the challenge of liberated and liberating intelligence were urged into meditations with the sages or into oratory with the masters of that art. For that sixth of Athenians known as citizens — Athenians who voted, argued in the marketplace, accepted embassies, and talked or taught philosophy — for such as these the years of childhood were all too short a term in which to learn to live: and thus they spent their entire lives in intellectual pursuits. The divisions of

[1] Sandys, J. E. *A History of Classical Scholarship.* Cambridge University Press, 1906. Second edition. P. 34.

Athenian schooling which are fairly well exemplified in the actual practices of authentic accounts were as follows: elementary education for pupils of 7 to 13 or 14; secondary education for pupils of 14 to 18; higher education for older students.

It should be understood that the Athenian period under discussion covers four centuries and that, as stated above, the Greeks progressed during these years. Their schools did not remain stationary. The content of the subjects of instruction as well as the names of the subjects themselves underwent changes. As there was no formal system of state education for elementary and secondary school pupils, there were great variations of practice. For this reason an extended account of their practices is significant for the student of curriculum reconstruction in America. As present-day knowledge of Greek education is limited to accounts written over two thousand years ago, our knowledge of certain aspects of it is far less detailed than our knowledge of the education of primitive peoples who are still living — no modern anthropologist can witness the life of ancient Greece. So great are the difficulties which result from these facts, that one finds wide diversity in modern published accounts of Greek education. In interpreting the outline of organization just given, one should, therefore, bear in mind the fact that the outline indicates general practice, and also that the subjects pursued were taught simultaneously in some schools though not necessarily in all schools. In reading the subsequent descriptions of the subjects, the student should notice the dates of sources in the cases where sources are given. As a chronological guide, Chart I may be valuable to some readers. Since an account of curriculum developments must trace changes in subject matter as well as in academic practices, the following

accounts deal not only with what all pupils studied, but also with what knowledge was extant in certain departments of thought.

CHART I

CHRONOLOGICAL CHART SHOWING THE CENTURIES IN WHICH CERTAIN GREEKS FLOURISHED

	Sixth Century, B.C.	
Anacreon	Thales	Pythagoras
	Fifth Century, B.C.	
Pindar	Heraclitus	Thucydides
Æschylus	Empedocles	Gorgias
Sophocles	Socrates	Pericles
Euripides	Democritus	Hippias
Aristophanes	Herodotus	Hippocrates
	Fourth Century, B.C.	
Antisthenes	Aristotle	Isocrates
Terpander	Zeno	Isæus
Menander	Epicurus	Demosthenes
Plato	Xenophon	Euclid
	Third Century, B.C.	
Archimedes	Eratosthenes	

What Grecian boys studied. In describing the subjects pursued by the Greeks, the same plan will be continued as was followed in the case of primitive education; that is, since this is an account of origins, subjects which are now found in secondary schools will be discussed even though the Greeks may have pursued these subjects in their elementary or higher schools. With these considerations in mind, one may include nine branches as comprising Athenian subjects which are analogous to those now offered in secondary schools. These branches are: literature, composition

and rhetoric, mathematics, science, social studies, religion, fine arts and applied arts, physical education, and music.

1. *Literature.* Throughout this period, the Homeric poems were recited, studied, and discussed in schools of all grades and at public gatherings. By an ordinance of Solon in 594 B.C., the rhapsodes, or "readers," at festivals were required to recite passages consecutively so that each rhapsode took his cue from the preceding reader. In addition to hearing these interpretative readings of Homer, boys read in school the works of the great poets. Later, other literary works, including lyric poetry, were read and interpreted. The following passages show something of the quality of Greek literature, the study of which has never ceased.

The place of prose in Greek reading was distinctly subordinate to that of poetry. This subordination Sandys ascribes, in part at least, to the belief that the poets were not only teachers, but also inspired beings.[1] As the lore of Greece was early turned into verse, the need for prose in teaching national or tribal traditions was slight. As a consequence, little prose save Æsop's fables seems to have been taught.

Quotations from the literature which has been the study of the nations' youth for centuries is justified by the present tendency to overlook entirely the people who have been called the source of all things good. The first passage is a famous parting scene which depicts Hector's leave-taking of his wife, Andromache. This passage can never be without appeal to youth as long as men respond to duty's call — whether to the call of drums or to the challenge of a peaceful task; whether the sacrifice is made by him who goes or by those who stay behind.

[1] *Op. cit.*, p. 84.

Hector's Farewell to Andromache

"Alas! my parents, brothers, kindred, all
Once more will perish if my Hector fall.
Thy wife, thy infant, in thy danger share:
Oh, prove a husband's and a father's care!
That quarter most the skilful Greeks annoy,
Where yon wild fig-trees join the wall of Troy:
Thou from this tow'r defend th' important post;
There Agamemnon points his dreadful host,
That pass Tydides, Ajax, strive to gain,
And there the vengeful Spartan fires his train.
Thrice our bold foes the fierce attack have giv'n,
Or led by hopes, or dictated from heav'n.
Let others in the field their arms employ,
But stay my Hector here, and guard his Troy."

The chief replied: "That post shall be my care,
Not that alone, but all the works of war.
How would the sons of Troy, in arms renown'd,
And Troy's proud dames, whose garments sweep the ground,
Attaint the lustre of my former name,
Should Hector basely quit the field of fame?
My early youth was bred to martial pains,
My soul impels me to th' embattled plains;
Let me be foremost to defend the throne,
And guard my father's glories and my own.
Yet come it will, the day decreed by fates,
(How my heart trembles while my tongue relates!)
The day when thou, imperial Troy! must bend,
And see thy warriors fall, thy glories end.
And yet no dire presage so wounds my mind,
My mother's death, the ruin of my kind,
Not Priam's hoary hairs defil'd with gore,
Not all my brothers gasping on the shore,
As thine, Andromache! Thy griefs I dread:
I see thee trembling, weeping, captive led,
In Argive looms our battles to design,
And woes of which so large a part was thine!
To bear the victor's hard commands, or bring

The weight of waters from Hyperia's spring!
There, while you groan beneath the load of life,
They cry, 'Behold the mighty Hector's wife!'
Some haughty Greek, who lives thy tears to see,
Embitters all thy woes by naming me.
The thoughts of glory past and present shame,
A thousand griefs, shall waken at the name!
May I lie cold before that dreadful day,
Press'd with a load of monumental clay!
Thy Hector, wrapp'd in everlasting sleep,
Shall neither hear thee sigh, nor see thee weep."

Thus having spoke, th' illustrious chief of Troy
Stretch'd his fond arms to clasp the lovely boy.
The babe clung crying to his nurse's breast,
Scar'd at the dazzling helm and nodding crest.
With secret pleasure each fond parent smil'd,
And Hector hasted to relieve his child;
The glitt'ring terrors from his brows unbound,
And plac'd the beaming helmet on the ground.
Then kiss'd the child, and, lifting high in air,
Thus to the gods proferr'd a father's pray'r:

"O thou! whose glory fills th' ethereal throne,
And all ye deathless pow'rs! protect my son!
Grant him, like me, to purchase just renown,
To guard the Trojans, to defend the crown,
Against his country's foes the war to wage,
And rise the Hector of the future age!
So when, triumphant from successful toils,
Of heroes slain he bears the reeking spoils,
Whole hosts may hail him with deserv'd acclaim,
And say, 'This chief transcends his father's fame':
While pleas'd, amidst the gen'ral shouts of Troy,
His mother's conscious heart o'erflows with joy."

He spoke, and fondly gazing on her charms,
Restor'd the pleasing burthen to her arms;
Soft on her fragrant breast the babe she laid,
Hush'd to repose, and with a smile survey'd.
The troubled pleasure soon chastis'd by fear,
She mingled with the smile a tender tear.

The soften'd chief with kind compassion view'd,
And dried the falling drops, and thus pursued:
"Andromache! my soul's far better part,
Why with untimely sorrows heaves thy heart?
No hostile hand can antedate my doom,
Till fate condemns me to the silent tomb.
Fix'd is the term to all the race of earth,
And such the hard condition of our birth:
No force can then resist, no flight can save;
All sink alike, the fearful and the brave.
No more — but hasten to thy tasks at home,
There guide the spindle, and direct the loom;
My glory summons to the martial scene,
The field of combat is the sphere for men.
Where heroes war, the foremost place I claim,
The first in danger as the first in fame."[1]

The importance of the drama in Greek education can be estimated in the light of what might be accomplished in America by powerful motion-picture dramas if motion pictures were shown only at festival seasons and witnessed as now by the multitudes. The character of the dramatic productions cannot here be fully illustrated — a single gem selected from the *Œdipus* must suffice to indicate the beauty of thought thus rendered to the people; the tragic force of this powerful drama is only suggested by this excerpt in which Creon tries to justify his actions in the presence of his brother, Œdipus, the king of Thebes.

. . . Is life like mine a thing
To cast aside and plot to be a King?
Doth a sane man turn villain in an hour?
For me, I never lusted thus for power
Nor bore with any man who turned such lust
To doing. — But enough. I claim but just
Question. Go first to Pytho; find if well
And true I did report God's oracle.

[1] *Iliad*, VI, ll. 546–637. Translated by Alexander Pope.

Next, seek in Thebes for any plots entwined
Between this seer and me; which if he find
Then seize and strike me dead. Myself that day
Will sit with thee as judge and bid thee Slay!
But damn me not on one man's guess. — 'Tis all
Unjust: to call a traitor true, to call
A true man traitor with no cause nor end!
And this I tell thee. He who plucks a friend
Out from his heart hath lost a treasured thing
Dear as his own life.
But Time shall bring
Truth back. 'Tis Time alone can make men know
What hearts are true; the false, one day can show.[1]

2. *Composition, rhetoric, grammar, and public speaking.* The science of language lingered far behind fine usage. This science as well as the antecedent practice seems to have grown directly from the civic life of ancient Greece. In early Greece, for example, Achilles was so trained that he

. . . mightst speak, when speech was fit, and do when deeds were done;
Not sit as dumb for want of words; idle for skill to move.[2]

In later Greece, skill in speech was needed by all who sought their rights in court; of the origin of rhetoric as an art, Jebb says,

The law-suits which followed the establishment of the democracy are said to have given him (Korax, about 455 B.C.) the idea of drawing up, and committing to writing, a system of rules for forensic speaking.[3]

This work contained rules (1) for the arrangement of a speech into five parts — proem, narrative, arguments, sub-

[1] Translated by Gilbert Murray, Oxford University Press. Pp. 34–35.
[2] *Iliad*, IX.
[3] Jebb, R. C., *Attic Orators*. Macmillan and Company, 1876. I, p. cxxi. Empedocles, *c.* 475 B.C., is cited, p. cxx, as the inventor of rhetoric.

sidiary remarks, and peroration, and (2) the topic of *general probability* — the question as to the probability that a case or event was thus and so.

The somewhat lowly origin of this art seems to have determined too largely the judgments rendered by later Greeks upon the sophists who taught and practiced rhetoric. As Isocrates asserts,

> They undertook to teach the mode of conducting law-suits — thus confining their subject to its most odious branch.[1]

In a later discourse, *On the Antidosis*, Isocrates shows clearly the distinctions to be made between himself, a teacher of superior quality, and certain sophists of his time; his literary skill has, he says, been used for no bad or lowly purposes. His curriculum was not a preparation for making law-speeches, but was instead designed for the youths who were to become the nation's pilots. For the training of such youths, this great teacher organized a general curriculum rather than one in which specific skills were perfected. He required three things to make a great speaker —

> Capacity, training, and practice. Capacity — which includes intellect, voice, and nerve — is the chief requisite. Practice, however, can by itself make a good speaker. Training is by far the least important of the three. It may be complete, and yet may be rendered useless by the absence of a single quality — nerve.[2]

What Isocrates meant by training is clear from many implications in his discourses: this training included all that makes good men just — "breadth of view; nobleness of moral tone; practical thoroughness of method; encouragement of solid work"[3] — work that is well done and that

[1] *Against the Sophists.* Quoted from Jebb's translation, *op. cit.*, p. 129.
[2] *Op. cit.*, pp. 143–144. [3] *Ibid.*, p. 49.

will have a permanent value. He appears to have belonged to that large group of teachers who are annoyed by, if not suspicious of, attempts to become definite in teaching. For the somewhat unspecialized life of the Athenians whom he instructed and before adequate analysis of life activities and needs had been introduced, this attitude toward the curriculum may have been more fully justified than it would be at present.

Meanwhile, the science of grammar developed so that by Plato's time the schoolboy's life included both grammar and composition, in the modern meanings of the two terms.

> . . . when the boy has learned his letters and is beginning to understand what is written, as before he understood only what was spoken, they put into his hands the works of great poets, which he reads at school; in these are contained many admonitions, and many tales, and praises, and encomia of ancient famous men, which he is required to learn by heart, in order that he may imitate or emulate them and desire to become like them. Then, again, the teachers of the lyre take similar care that their young disciple is temperate and gets into no mischief; and when they have taught him the use of the lyre, they introduce him to the poems of other excellent poets, who are the lyric poets; and these they set to music, and make their harmonies and rhythms quite familiar to the children's souls, in order that they may learn to be more gentle, and harmonious, and rhythmical, and so more fitted for speech and action; for the life of man in every part has need of harmony and rhythm.[1]

As Plato recognized the parts of speech, number, tenses of verbs, and voice of verbs, and as Protagoras had already distinguished between the moods of verbs and the genders of nouns, one may conclude that, by the fourth century, though not long before that time, grammar as now understood was taught to Athenian youth.[2]

[1] Plato. *The Protagoras.*

[2] Cf. Sandys, *op. cit.*, Chapter VII.

Aristole in his *Rhetoric* carried grammatical analysis still further by distinguishing among deponent and neuter verbs, conjunctions, connecting particles, and connecting clauses. He describes also the art of paragraphing. In rhetoric, in the modern sense, Aristotle's work is foundational. It includes an elaborate terminology with definitions and examples, an extended discussion of propriety of style and of meter and rhythm in prose, and a treatment of the formal divisions of a discourse.

3. *Mathematics.* In a systematic account of the history of mathematics as a formal subject, few chapters can precede that in which the work of the sages of Greece is recorded. Early in the Athenian period, Thales, one of the "seven wise men," betook himself to Egypt on a commercial enterprise. While there he allowed himself to wander among the haunts of Egyptian priests. Ere long he passed his masters and won the admiration of others by his skill as a geometer.

The second great geometer, Pythagoras, was, so tradition says, taught and inspired by Thales. From his master he went also to Egypt and, like Thales, excelled his masters and amazed all casual workers in geometry. Although much of the work of Pythagoras was associated with philosophical speculation and mysticism, he was able to add greatly to mathematics and, according to the historian Proclus, gave to his science the name of mathematics.

As a result of the work of these two men and their pupils, geometry had, by 480 B.C., arrived at the following state. The subject matter included the bulk of the first two books of Euclid, portions of the fourth and sixth books, and a sketch of the doctrine of proportion. Little was known of the properties of the circle; for example, the theorem which states that the angles in the same segment of a circle are

equal to each other was unknown to mathematicians of this time. Approximations were then employed in solving such problems as that involving the relation between the circumference of a given circle and the perimeter of a square of equal area. The form of geometry underwent an important development prior to this time. Instead of being a purely practical, rule-of-thumb procedure, it had become a science with definitions and proofs which had universal application. The use of the equation in connection with proportion was introduced to Greece by Thales. The organization and method of geometry comprised, as early as the time of Pythagoras, the combination of arithmetic and geometry. This early combination of arithmetic and geometry by Pythagoras leads Allman to rank him alongside Descartes to whom we owe the combination of algebra and geometry.[1] From this time forward geometry flourished, and in the fourth century Euclid collected and wrote what is still known as the *Elements* of geometry. Under Archimedes of the following century, further refinements, extensions, and applications of geometry were made. The content of this branch of learning is now too well known to require illustration. Among the Greeks, geometry was taught in secondary schools and arithmetic in both elementary and secondary schools.

The development of arithmetic from the period of primitive groping to the time of Archimedes can be judged by comparing the samples of primitive reckoning described in Chapter I with the following proposal of Archimedes. This proposal, called the *Sandreckoner*, which was made to King Gelon of Syracuse, indicates incidentally something of the status of science among the Greeks.

[1] Allman, G. J. *Greek Geometry from Thales to Euclid.* Hodges, Figgis and Company, Dublin, 1889. P. 48.

There are some, King Gelon, who think that the number of the sand is infinite in multitude; and I mean by the sand not only that which exists about Syracuse and the rest of Sicily but also that which is found in every region whether inhabited or uninhabited. Again, there are some who, without regarding it as infinite, yet think that no number has been named which is great enough to exceed its multitude. And it is clear that they who hold this view, if they imagined a mass made up of sand in other respects as large as the mass of the earth, including in it all the seas and the hollows of the earth filled up to a height equal to that of the highest of the mountains, would be many times further still from recognising that any number could be expressed which exceeded the multitude of the sand so taken. But I will try to show you, by means of geometrical proofs which you will be able to follow, that, of the numbers named by me and given in the work which I sent to Zeuxippus, some exceed not only the number of the mass of sand equal in size to the earth filled up in the way described, but also that of a mass equal in size to the universe.

Now you are aware that "universe" is the name given by most astronomers to the sphere the centre of which is the centre of the earth, while the radius is equal to the straight line between the centre of the sun and the centre of the earth. This is the common account, as you have heard from astronomers. But Aristarchus of Samos brought out a book consisting of some hypotheses, in which the premises lead to the conclusion that the universe is many times greater than that now so called. His hypotheses are that the fixed stars and the sun remain unmoved, that the earth revolves about the sun in the circumference of a circle, the sun lying in the centre of the orbit, and that the sphere of the fixed stars, situated about the same centre as the sun, is so great that the circle in which he supposes the earth to revolve bears such a ratio to the distance of the fixed stars as the centre of the sphere bears to its surface.[1]

4. *Science.* The teaching of science among the Greeks was subordinated to the teaching of linguistic subjects. Science

[1] Heath, T. L. *Archimedes.* Macmillan and Company, 1920. Persons who are desirous of finding an example of skillful ancient computation, will be interested in following the process by means of which Archimedes found the number of grains of sand in the universe to be 10^{63}.

was not a subject which determined the success of an Athenian citizen. It was not yet a subject with diversified practical applications. Men of science were highly speculative; men of the applied arts were highly practical. Men of science and men of practice were further divided by the ancient notions of the wise who held that the arts, being matters of mere skill, were inferior to speculative matters. This divorce of science and practice seriously restricted the development of both: science neglected the simple testing of conclusions; applied arts were deprived of intelligent guidance. For example, Aristotle with his great wisdom overlooked the need for testing his conclusions about falling bodies and by doing so thrust upon the world a misconception which had to wait until Galileo's day for correction. Meanwhile, neither science nor any one of the applied arts was generally taught to adolescent boys. Consequently, this discussion of science deals with the progress in science rather than with the general teaching of science.

The procedure of the Greeks was prompted by their mistaken notion in regard to the "essence" of things. If any object were submitted to the speculative scrutiny of a philosopher, its essence was likely to be determined, and thereafter the object was required — so far as speculative science was concerned — to conduct itself according to the alleged essence. If, therefore, by the essence or nature of things, it were found that a heavy body fell more rapidly than a lighter body, then it was easy to see that of two bodies of different weight, the heavier must fall the more rapidly. From this point it was easy to see also that for two such bodies the rate of acceleration would be greatest for the heavier body.

Had Aristotle been less encyclopedic in his pursuit of science — had the essence of more objects been left undeter-

mined — fewer obsessions might have cramped the centuries succeeding him. It would be quite misleading, however, to leave the impression that no scientific applications or first-hand observations were made by the Greeks.

Despite a lack of keenness in science comparable with their keenness in speculation, the Greeks possessed scientific knowledge which was far in advance of that possessed by primitive man. Despite the fact that as a subject of study by schoolboys science lagged behind linguistics, far more than a beginning was made in many of the branches of science. Despite the fact that the Greeks in certain cases merely transferred science from primitive superstition to dogmatic speculation, the advances made by this people are worthy of a brief outline here.

By their own genius and with the assistance of other peoples, particularly the Egyptians, the Greeks developed a large body of scientific knowledge. As this outline is based upon the work of a very few men of outstanding achievement, the subject, as treated by most teachers, even in higher schools, was probably inferior to that which is here sketched. A first-rate man of science who tested and applied his science — who even derived much of his science by experimentation — was Archimedes. But this third-century scientist, like his contemporary Eratosthenes, was too late to influence Athens during her period of intellectual supremacy. An earlier scholar, Aristotle, made extensive first-hand studies in biology, as will be seen later. As stated above, this outline is given as a sketch of samples of the available knowledge of science among the Greeks, and not as an outline of an actual school course in science.

a. In *physics*, the Greeks knew certain properties of light as evidenced by their use of lenses and mirrors; for example, Aristophanes refers in *The Clouds*, Act II, to the burning-

glass by which fires can be kindled and wax melted. In electricity and magnetism, it was known by Thales that amber, when rubbed, will attract light bodies, and the story of the discovery of magnetite by Magnis the shepherd was current. In mechanics, Archimedes knew many of the laws of levers and pulleys — "Give me a fulcrum on which to rest," he is alleged to have said, "and I will move the earth." His study of floating bodies and his knowledge of the water displacement of metals are matters of common knowledge. In sound, Pythagoras is credited with an investigation of the relation between the weights of hammers and the pitch of sounds produced by them as they struck an anvil. In physical theory, Democritus set forth an atomic theory of matter.

b. In *biology,* the study of medicine and surgery seems to have prompted investigation which was carried to a high degree by Aristotle, in whose works are found classifications of plants and animals and accounts of their development and structures. Aristotle's work in biology was based largely upon direct observations of some five hundred living forms, fifty of which he dissected. These animal forms he classified upon such bases as dentition, the presence of vertebræ, and "family" likenesses.

The following excerpt indicates something of the nature of Aristotle's encyclopedic and foundational work:

> The urchins are devoid of flesh, and this is a character peculiar to them; and while they are in all cases empty and devoid of any flesh within, they are in all cases furnished with black formations. There are several species of the urchin, and one of these is that which is made use of for food; this is the kind in which are found the so-called eggs, large and edible, in the larger and smaller specimens alike; for even when as yet very small they are provided with them. There are two other species, the *spantangus,* and the so-called *bryssus;* the animals are pelagic and scarce. Further, there

are the *echinometrae*, or "mother-urchins," the largest in size of all the species. In addition to these there is another species, small in size, but furnished with large hard spines; it lives in the sea at a depth of several fathoms; and is used by some people as a specific for strangury. In the neighborhood there are sea-urchins of a white color, shells, spines, eggs, and all, and that are longer than the ordinary sea-urchin. The spine in this species is not large nor strong, but rather limp and the black formations in connexion with the mouth are more than usually numerous, and communicate with the external duct, but not with one another; in point of fact, the animal is in a manner divided up by them. The edible urchin moves with greatest freedom and most often; and this is indicated by the fact that these urchins have always something or other on their spines.[1]

c. In *earth sciences*, Eratosthenes computed the circumference of the earth and placed the zones mathematically.[2] Strabo, in the first century, prepared an extensive account of the geography of Asia Minor.[3] These two citations indicate the expansion of the "known" world, and, taken with the common knowledge which must have been disseminated by travelers, show the Greeks to have possessed a sufficient volume of geography for educational purposes.

5. *Social studies.* During the era of sophist teaching, training for citizenship was the prime motive of education. Much of the rhetoric already referred to was undertaken specifically for this purpose. Besides this training there was that offered as Grecian traditions through the national poetry. In addition to the reading about and discussion of historical and contemporary problems, the boys were expected to receive incidental civic training from art, music,

[1] Aristotle. *Historia Animalium.* Clarendon Press, 1910. Translated by D'Arcy Wentworth Thompson. Pp. 530a–530b.

[2] Cf. Thalamas, A. *La géographie d'Eratosthène.* Ch. Barbier, Versailles, 1921. Pp. 94–185.

[3] Leaf, Walter. *Strabo on the Troad.* Cambridge Press, 1923. A translation of Strabo's account of the Troad.

and gymnastics. Plato in his discussion of an ideal state only slightly exaggerated the best Athenian education of his day when he described the ideal system of training as at least looking toward a time when philosophers should be kings.[1]

Finally, the ephebic oath which was taken when the youth was eighteen years of age summarized formally the civic training of the times. At the time of taking this oath the youth was presented with spear and shield and, with due ceremony, received into citizenship. This impressive oath ran as follows:

> I will never disgrace these sacred arms, nor desert my companion in the ranks. I will fight for temples and public property, both alone and with many. I will transmit my fatherland, not only not less, but greater and better, than it was transmitted to me. I will obey the magistrates who may at any time be in power. I will observe both the existing laws and those which people may unanimously hereafter make; and, if any person seek to annul the laws or set them at naught, I will do my best to prevent him, and will defend them both alone and with many. I will honor the religion of my fathers. And I call to witness Aglaurus, Enyalius, Ares, Zeus, Thallo, Auxo, and Hegemone.

6. *Religion.* In quite the manner in which modern cynics view the man who spends his half-Sunday in church, so Plato in one of the dialogues gently plays with the old-fashioned notions of his friend whom he finds "at prayer." This means neither that the Greek of enlightened Athens had outgrown all gods nor that Plato himself was unable to find comfort or stimulation in religion. It does indicate, however, that the old forms of ceremonies were falling into disuse.

With the decline of interest in the older ceremonies, there was a decline in the literal interpretation of the Grecian

[1] Plato. *The Republic*, V. 473.

"scriptures." There was a natural refusal longer to follow the early beliefs in unethical, irrational gods. Religion came gradually to be an ethical system which though exalted and exalting lacked in appeal to all classes of society. The following quotation from Freeman indicates the character of the problem of religious education by Plato's time, the method and place of instruction, and an advanced proposal much of which was actually carried out among the more scholarly classes of the Greeks.

Plato is not prepared to rewrite the Hellenic Bible, but, as Freeman continues, he proposed canons which should be followed in the choice of the materials of instruction. "The first canon is that God, being good, cannot be the cause or originator of any harm or evil to mankind. . . . The second canon is that God is not a wizard, appearing now in one form, now in another." The application of these canons would have excluded most of Homer and Hesiod as well as many of the lines of poems of the Athenian Age.[1] There was, of course, much religious instruction included in the actual teaching of civics and morals by all the great teachers of Greece.

7. *Fine and applied arts.* The appreciation of art was one of the most important national pastimes of the later Greeks. Their art, addressed as it was to every one who wished to look upon it, was necessarily a popular art. The importance of art in education is reflected by the belief that, even though one did not regard art as a profession, one must practice it for at least two purposes: the disciplinary purpose, to cultivate a fine nature; and the practical purpose, to avoid being duped by fakirs in art.

During the early Greek period and until the time of Socrates, art was concerned chiefly with the gods, victors in the national gymnastic contests, and heroes. During the

[1] Freeman. *The Schools of Hellas.* Macmillan and Company, 1907. Pp. 231–233.

lifetime of Socrates, art broadened so as to represent more fully the life of the great Athenian age. Contemplation rather than mere satisfaction became the artist's objective. Attached to this conception of art was the moral quality which was believed to exist in fine art: every work of fine art was "such that its moral purpose was manifest to the average man." [1] This notion is illustrated still further in the later paragraphs on applied arts. It was during this period that systematic instruction in drawing and printing became general in Greek schools. In the *Protagoras*, there are references to boys going to artists to receive instruction, but this was for those only who expected to become artists. From this work and from the elements of drawing taught in many earlier schools, there seem to have developed the more extensive school courses of the fourth and third centuries. By 300 B.C., Freeman asserts[2] that art had no doubt become a regular part of the curriculum. This scholar supports his statement by references to pictures and the common use of art terms in Plato's discussions of art.

Although the educated Greeks performed distinguished service in developing the fine arts, they regarded the applied arts of the modern curriculum with mild favor and sometimes with disdain. Socrates, for example, could think of no more complete method of confounding the great orator Gorgias than by associating with rhetoric another form of art called cookery (Polus and Socrates are speaking):

Soc. Since, then, you prize giving pleasure, are you willing to give me a little pleasure?

Pol. I am.

Soc. Ask me, then, what kind of art cookery appears to me to be.

[1] Freeman, K. J., *op. cit.*, p. 244.
[2] *Op. cit.*, p. 115.

Pol. I do ask you; what kind of an art is cookery?
Soc. None at all, Polus.
Pol. What is it? say.
Soc. I say, then, it is a certain skill.
Pol. Of what? say.
Soc. I say, of procuring gratification and pleasure, Polus.
Pol. Are cookery and rhetoric the same thing?
Soc. By no means, but a part of the same study.[1]

Plato, in *The Republic,* was, however, solicitous about the development of ideals of craftsmanship: "Ought we not keep an eye," he says,

on the craftsmen also, and prevent them from representing moral evil or disorderliness or bad taste or lack of grace or lack of harmony either in their imitation of animals or in their buildings or in any other object of their craft? . . . Must we not rather search for such craftsmen as are able by their native genius to discover what is beautiful and graceful? For in this way our children, dwelling in a region of health, will be influenced for good by every sound and every sight of these works of beauty, inhaling as it were a healthy breeze that blows to them from a healthy land.[2]

Taken together these passages indicate that applied arts were held to be not without merit, and that these arts were to be cultivated. In their original context these passages indicate that training and practice in the arts belonged, however, to persons who were not destined for philosophy or other scholarly pursuits.

8. *Physical education.* Physical education received great emphasis throughout ancient Greece. By the time of the Athenian period the older customs of training boys for physical endurance had given way to physical training for

[1] Plato. *The Gorgias.* 462 ff. Translated by B. Jowett. Clarendon Press. 1892. (Two cookery books appeared during this period: one by Simos; the other by Mithaikos.)
[2] Plato. *The Republic.* 401B.

the cultivation of bodily grace and symmetry. Attention to athletics persisted, however, even throughout this period. One of the leading poets, Pindar of Thebes, is now represented very largely by the odes which were written in honor of the victors in the national athletic contests. Not without criticism, however, was this great attention given to physical training. Socrates, for example, remarks that "It is strange that the founders of the great Festivals should have kept all their rewards for a physical prowess which serves only the athlete himself, and should have assigned no honour to the mental toil from which flow benefits to all." [1]

Physical education was given during the elementary school years in the palæstra and during later years in the gymnasia. The types of training included practice in correct posture, setting-up exercises, running and jumping, discus and javelin throwing, ball games, rope climbing, boxing, and wrestling.[2]

9. *Music.* Music and art fared somewhat alike when the decadent period began. Even in Plato's time certain forms of both these subjects had fallen into disrepute, the causes being that artists and musicians of fourth-century Greece catered to the crass demands for a type of realism which was analogous to that required of modern artists and musicians. Lyre playing was, however, a regular subject of study for boys. The ability to play the lyre was so common that a proverbial reference to an ignorant person was, "He cannot even play the lyre." [3] Associated with lyre playing was the study of lyric poetry. As soon as the boys mastered the lyre sufficiently, they were taught to play and sing. Plutarch says that the Athenian laws were very likely

[1] *Panegyrikos.* Par. 1. Translated in Jebb, *op. cit.*, p. 152.

[2] Freeman's excellent chapter on this subject should be read as a scholarly picture of palaestra and gymnasium scenes: *op. cit.*, Chapter IV.

[3] Cf. Aristophanes. *Wasps*, 959.

learned in metrical form in this way.[1] The flute was at one time a popular instrument, but the Greeks ejected it, as an intelligent modern world might eject the yelping saxophone — and for the same reason.[2]

The respectful attitudes towards music of the three great philosophers of Greece are shown in their writings. First, Socrates, late in life, attended the music school of Konnos.[3]

Second, in the *Protagoras*, Plato says,

> The music-master makes rhythm and harmony familiar to the souls of the boys, and they become gentler and more refined, and having more rhythm and harmony in them, they become more efficient in speech and action. The whole life of Man stands in need of good harmony and good rhythm.[4]

Third, Aristotle pays his respects to this subject when he says,

> Music is neither a necessary nor a useful accomplishment in the sense in which Letters are useful, but it provides a noble and a worthy means of occupying leisure time.[5]

Curriculum contributions of ancient Athens — spirit and content. Primitive man found a world of chaos. To that unordered world he applied his slender skill in thought. Thought soon led to system. The pity is that the early system satisfied the thinker and became too soon the boundary line of thought. This finality led as we have seen to penalties for nonconformity, and early man remained too long a prisoner in his self-created cell. Primitive attitude, primitive subject matter, primitive life itself then turned ever inward to its ever-narrowing world — a world whose

[1] *Solon*, III.

[2] A flutist's brains can never stay:
He puffs his flute, they're puffed away. — *Athen*, 337f.

[3] Plato. *Euthydemus*, 272C. [4] *Protagoras*, 326B.

[5] *Politics*, VIII, 3. 7.

soul was destitute of the nurture of the soul, self-directed thought.

To this enfettered soul, the land of Greece gave hope. How that land came to rescue man and how far short the promise was that even Athens gave will be a topic for Part II. But there it was that conformity — tribal ideals, fear, superstition, and, in many matters, downright blindness — gave way to individuality and later to education planned to cultivate individuality. A striking and objective contrast between the primitive and the enlightened man is shown in the physical education practiced by the two: in one is brutality, mutilation, and at best sheer endurance; in the other is sportsmanship, grace, and glorification of studied skill.

The men of Athens pored over problems which have persisted to modern times. What should children learn? asked Plato and, before him, Isocrates. This question they settled by analyzing man's capacities, the effects of training and practice, and what each youth proposed to do. To the results of this analysis they brought the content then available and added more as life demanded it,[1] or as men of literature, science, art, or philosophy discovered new items and forms of subject matter. No less than men of modern America did the men of Athens try to face the problem of education for the workaday world. But the world which they studied, unlike the scope of the student of American secondary education, was limited to a small fraction of Athenians. For the youth of genius they decided as have men ever since: this youth's practical needs include, as Isocrates maintained, all that makes the good man just; and this view needs only to be fitted to each youth, as Isocrates fitted it, to

[1] Cf. the development of rhetoric outlined above as a direct outgrowth of activity analysis.

lead to the modern specialized curriculum for the brilliant youth of our day. The modern problem of religious education with its host of students finds likewise its counterpart in ancient Athens. While modern scholars of all faiths forbid the use of certain Hebrew lore for ethical training, just so one finds the tales of early Greece proscribed by Athens. The place of art in the curriculum grew directly out of the Greek tendency to conventionalize the practical and give to common things a touch of grace; their conclusions committed the schools definitely to what was then thought best in art and music. The problem of the classification of pupils led teachers to select and organize curricula and plans for pupils' lives on the bases of abilities, interests, social position, and financial rating. That the problems of individual differences were not solved is not because the problems were unseen, but because the technique of modern psychology and the attitude of modern sociology had to be developed before these problems could be solved. The technique of viewing "with alarm," with intelligence, or with pleasure any modifications or improvements in the curriculum can be exemplified in a score of ancient works still extant.

The Greeks showed their youth an ordered world. In physics, biology, earth sciences, and astronomy; in mathematics; in language — expression, forms, and interpretation; and in life itself, the ancient sages reduced to system all they saw or pondered. This rational contemplation of things within reach (science) and of things beyond reach (metaphysics) attained a quasi-culmination in encyclopedic Aristotle. And not only were science and metaphysics employed to integrate the life and thought of Greece; art also drew together and depicted what the genius saw in nature or felt in contemplation. Art as practiced by the Greeks gave expression through literature, oral expression,

music, physical education, noble living, craftsmanship, and that which art connotes in a restricted sense. The art of living nobly was in this age the culmination of all art; this branch of art included the ability to live well, fully, happily, and nobly within established conventions. The best example of a man was no longer the strongest brute, but was instead he who possessed the clearest and best-ordered brain. Out of this orderly Greek world arose a dangerous tendency to allow the principles rather than a combination of principles and concrete experiences to form the curriculum.

Despite the many glories that were hers, Athens thus had her limitations, some of which find parallels in present-day practices or attitudes. Among her limitations as they affected the curriculum was a social system which excluded from education all save a sixth of her population. Limitations in educational method grew out of the tendency to pursue mathematics as a branch of mysticism with charms, the tendency to separate too completely science and practice, the failure to take time for experimentation, the lack of time and opportunity for extensive travel, and the common failure to see the ideal of the superior craftsman. The problem of religion was badly handled because of the failure of the intellectuals to give proper consideration to the masses in the reconstruction of religion. Perhaps the most fundamental limitation was, however, the dogmatic form of scientific speculation. Although Aristotle made many direct observations and for his day left a notable record of progress, his habitual speculative procedure posited an essence or innate characteristic for every object. The innate characteristic then became the major premise in his thought about the object and, when accepted as it was in later centuries, it blocked the progress of science and became the sheerest verbalism.

Modern experts have launched a program for economy. This program deals with two forms of economy, one of which emphasizes speed, while the other emphasizes efficiency. Not all critics have, in their discussions, recognized these two forms, but have instead devoted themselves to speed. In undemocratic Greece there was no great need for haste in completing academic training, but there was need for the other and more basic type of economy; namely, the economy which accompanies those mental procedures in which concepts and universal principles supplant inaccurate, rule-of-thumb guesses. It is seldom possible, however, to develop principles which have universal applications save by allowing such principles to grow out of familiar, concrete experience; and later these principles, to have significance, must be applied by the learner. Such a process entails a heavy expenditure of time and may, as a consequence, be judged wasteful. In opposition to this view that the pursuit of abstract systems of thought is wasteful, the Greeks held that pupils who are able to master concepts which have universal application save themselves from waste of effort. That is, for all departments of knowledge which have been rationally systematized, pupils may profitably combine the study of principles and practice.

Modern men have mechanized much of life and increased the quantity of knowledge, but in certain forms of insight they have made little improvement in quality and mental economy. By their power in literature and art, for example, the Greeks reduced the number of directions of further improvement; in these fields, extensions, but not improvements, have been made. In characterizing primitive and Athenian contributions to curriculum growth, it may be said that primitive education represents the radicle; Greek education then represents the strong brace roots. Each branch of this

growth represents a step toward mental economy rather than toward waste and encumbrance in the training of youth. For example, mathematics was changed by the Greeks from a relatively concrete and cumbersome subject to an abstract, universal science; the economy which followed this change is obvious. The training of youth in oral and written expression was also made efficient by the development of systematic principles which had general application in both speech and writing. As this conceptualizing or universalizing of knowledge is an outstanding characteristic of Greek curriculum developments, a search for the content of a modern program of studies constantly drives the modern educator back to Greece as a source of concepts which have led to mental economy. There it was that great economy began when a gifted race grappled with the changing conditions of life as issues in curriculum making and then drew up rational plans for formulating the objectives of education, for treating the individual differences among pupils, and for choosing the agents of instruction. Greek contributions cannot be finally appraised until after their constructive criticisms and their objectives have been discussed in Parts II and III. If modern problems are found to be quite different from those of ancient times, then and then only can a program for economy be justified in discarding the content and practices of ancient Athens and returning to the cruder practices of peoples who lived before elaborate conceptual schemes of thought had been invented.

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CHAPTER III

ROMAN AND MEDIÆVAL CURRICULUM PRACTICES

Characteristic contributions from Rome. At about the age of twelve, the Roman schoolboy was promoted from the elementary to the secondary school. In the elementary school the boy had acquired the mechanics of reading and writing, the rudiments of arithmetic, and had studied literature. During the early period, prior to 80 B.C., the boy memorized the laws of the Twelve Tables. These laws, together with certain precepts and maxims, constituted the social studies of the elementary school. The study of literature consisted of two branches: the study of style and the interpretation of meaning. The secondary school to which the boy next proceeded was the first definitely organized secondary school and was known as the grammar school. As such, it was a school for adolescents and was the prototype of the modern grammar school, academy, and reorganized high school. The boys went regularly to school, paid their fees on every Ides,[1] and received both class and individual instruction. This grammar school, whose course was three or four years in length, was followed by the school of rhetoric, whose length was usually at least two years. Thus Rome gave order to the secondary school.

The curriculum of the Roman secondary school. Quintilian (35 A.D.–95) described in detail the curriculum of the later Roman secondary school.[2] This curriculum is best

[1] Horace, *Satires*, I, vi, 76.

[2] Quintilian. *Institutes of Eloquence.* Translated by H. E. Butler. G. P. Putnam's Sons, 1921. Four volumes. Latin and English text.

understood when viewed in connection with the curricula of the pre-school and elementary school periods. The following account of these curricula is based upon Quintilian's comprehensive treatise.

During the preschool period, before the child was seven years of age, the chief elements of training were the rudiments of Latin and Greek and such general information as results from carefully planned play. Many families employed Greek nurses of high intelligence and much refinement; great care was taken to see that the children learned from infancy the correct pronunciation of the languages.

During the elementary school period, ages seven to twelve, the slave companion or *pedagogus* had general charge of the child. In this school a basis was laid, as at the present time, for the work of a higher school. The subjects of study were reading, writing, and arithmetic. The reading then embraced the mechanics of reading during the earliest years and the study of literature during the later years. Greek literature, said Quintilian, was to be studied before Latin, because Greek was the origin of Latin and because Latin was certain to be learned anyway. Neither language was, however, to be so exclusively pursued as to impede progress in the other.

The secondary school was divided into two divisions, the junior division or grammar school of about four years and the senior division or school of rhetoric of about two years. In both divisions the literary studies of the elementary school were continued. Such literary study was here, as in Greece, known chiefly as grammar. The *grammaticus* or teacher of grammar had both extensive and intensive duties. Grammar embraced, first, such technicalities as the sounds and values of letters and linguistic modifications and historical changes of letters; second, the inflectional properties of the different parts of speech, with reasons therefor; and,

third, syntax and composition. Besides attending to these technicalities, the *grammaticus* tried to instil an appreciation of and skill in the elements of style: excellence, lucidity, and elegance. Literary study of this sort was conducted in connection with the interpretation of the poets. The study of poets included, as it often does today, a consideration of style, philology, rhythm and meter, and historical allusions. Grammar was sometimes further extended to embrace oral expression. More frequently eloquence and rhetoric were the terms applied to the study of expression. Oral reading occupied an important place at this stage, as it did also in the elementary school; for this work, prose and poetry were drawn from many sources. Besides literary studies, boys studied music, geometry, arithmetic, and astronomy during the junior division of the secondary school.

In the senior division of secondary education, called the school of rhetoric, the boy pursued advanced courses in oral and written expression and thus laid a solid foundation for his later activities as an orator. Here, pure Latin was studied, great care being given to choice of both words and subject. The character of this word study is indicated by Quintilian's insistence upon the specific significance, form, measure of words, and the propriety of words to both the meaning to be portrayed and the occasion of each discourse. The occasion of the discourse was the guide also to the arrangement or order of the words and the divisions of the discourse as well as to the expression of the speaker. As a basis for his academic course in composition, Quintilian provided for extensive reading of Greek and Roman poets, historians, philosophers, and orators, each of whose writings he characterized in regard to use of both content and form. Training in expression was provided by a carefully graded system of lessons in oral Latin. These lessons began with

the simple, well-prepared declamation of passages of increasing difficulty and led to half-extempore speaking for which preparation had been made and finally to extempore delivery. At this final stage much attention was given to voice and gesture. Motivation for this work was afforded by the demands of the Forum, which was of compelling interest to all enlightened Romans.

The contributions of Rome are thus found to be characteristic: she organized the school itself, she furthered the systematization of the courses, and she made her education more practical than that of philosophical Greek teachers such as Plato and Aristotle. In other words, Rome adopted and developed the aim of Isocrates. The following quotation from Quintilian presents the educational ideal of Rome's greatest schoolmaster and also of Isocrates:

> Let an orator be such a man as we may term truly wise; not only accomplished in his manners (for I think differently from those who think that that is sufficient), but in knowledge and the practice of speaking, beyond what perhaps ever any man was. But this is no reason why we should relax in aiming at perfection. It was the practice with most of the ancients to lay down maxims of wisdom, though they did not admit that any man was perfectly wise. For there is certainly such a thing as perfection in eloquence, and there is nothing in human nature that forbids our attaining it. But even though it should not be attained, yet still they who aspire to the summit, will go higher than they who, preposterously despairing of succeeding in their aim, loiter at the bottom.[1]

The part played by Rome in the development of curricula. This account of secondary education in Rome of the first century of our era shows the genius of the Romans in organizing and furthering what had been begun by their Roman ancestors and by the Greeks. They were, in

[1] Quintilian, *op. cit.* (William Guthrie's translation), vol. I, pp. 5–6.

this respect, no mere imitators. They developed in Rome the same rationalized forms of subject matter prior to the invasion of Greek thought as those which the Greeks had developed some centuries earlier. One reason why they appear to be imitators of the Greeks is that they had reached, by the time of the elder Cato (234–149 B.C.), a stage of cultural development which was in many respects analogous to that which the Greeks had reached when the sophists began to ply their craft in fifth-century Greece. It is, therefore, to the credit of the Romans that they were able to distinguish the most excellent from all the examples of human development which were then extant and adopt and adapt certain Greek practices to attain their own ends.

To the assertion that the Romans were a narrow, practical people and lacking in originality, it should, therefore, be said that prior to the Greco-Roman period, the Romans had already traveled a very considerable distance toward the discovery and dissemination of knowledge, that they continued their journey by adaptations which they themselves made of the best of ancient lore and practice, and that they developed still further for the Middle Ages nearly all the branches of knowledge which they had inherited from the Greeks. That the Romans added no new subjects save possibly agriculture to the curriculum is the only reason for concluding so summarily this account of the educational contributions of the Romans. As the Greeks developed and added subject matter to the means of educating youth, so the Romans continued to add subject matter, particularly literature, and also added organization and administration.

The seven liberal arts. Christian boys of the Middle Ages pursued, or, more accurately, suffered in the absorption of, the seven liberal arts. These liberal studies were among the gifts of Greece and Rome to Western Europe. The pity

is that Western Europe and not Greece herself arranged the details of this gift, and that too little of the soul of Athens reappeared in the organizing and conducting of the study of these arts. Later, the curriculum of the early modern period was developed from these seven subjects.

It was Varro (116–127 B.C.), the most learned man of his century, who outlined for Rome and the West this gift from the Greeks. By canvassing Roman life he was able to search intelligently for the branches of learning which were needed to supply the proper training for Roman boys. Of Grecian learning he found nine branches with which to complement the science that was known to Rome. These nine branches of pagan learning were met by two attitudes of Christian Rome. First, there was grave concern as to the desirability of encouraging pagan thought. Second, there was full realization of the need for Greek learning as a foundation for a Christian curriculum. Even as wise a man as Augustine (354–430 A.D.) held and expressed both views; though he finally decided in favor of the second. Augustine, therefore, named six of the seven liberal arts which he thought necessary for the training of youth.

To Martianus Capella of Carthage (about 500 A.D.) was left the task of fixing the arts to the number of seven. In his somewhat veiled introduction of the seven arts, he set forth an allegorical account of the marriage of Philologia and Mercury. This supposedly beautiful setting enabled Capella to present as bride the earth-born maiden Philologia, who represented school learning, and as bridegroom the heaven-born Mercury, inventor of letters and the symbol of Greek learning. The first two books of Capella's work were devoted to the principals of the wedding, and the remaining seven presented the seven bridesmaids, who symbolized grammar, rhetoric, logic, geometry, arithmetic, astronomy,

and music, respectively. In addition to Capella's list, Varro had included medicine and architecture, both of which Capella rejected as bridesmaids because they were concerned with perishable earthly things and had nothing in common with the ethereal and divine. Augustine had omitted astronomy because of its questionable astrological association, but included philosophy.

The arts thus fantastically presented by Capella were adopted both by writers on education and by schools. Although not all schools offered all these subjects, these were the basal arts, and grammar was the solid rock on which all other arts were founded. What Capella failed to mention, others were quick to see; namely, that seven was the heaven-ordained number: "Let us understand plainly that whensoever the Holy Scriptures mean to set forth anything as entire and complete, as they frequently do, it is comprehended under the number, even as David says, 'Seven times in the day have I spoken praises unto thee,' and Solomon, 'Wisdom hath builded her house; she hath hewn out her seven pillars.'" [1] Thus it happened, Parker says,

> that the pedigree of the seven arts is an important part of the history of modern literature. The doctrine that they were seven was immutably established and no one ventured to controvert it or break up the list. The family was, in fact, in the condition of the family in Wordsworth's poem. . . . its device was "We are seven."[2]

The seven liberal arts were classified into two groups — the trivium, which consisted of grammar, rhetoric and logic, and the quadrivium, which consisted of geometry, arithmetic, astronomy, and music. The content of these subjects

[1] Cassiodorus. *On the Arts and Disciplines of Liberal Letters.* Quoted in translation by A. F. West, *Alcuin.* Charles Scribner's Sons, 1892. P. 22.
[2] Parker, H. "The Seven Liberal Arts." *The English Historical Review,* XIX, 417–461. July, 1890. P. 422.

was not, however, the same as that now included under these seven names. As the early modern differentiation of subjects was based upon these seven studies, the subject matter of each will be briefly summarized.

1. *Grammar.* The basal character of grammar is attested by the common description of it by such terms as "foundation," "doorkeeper" of all the other sciences, "mistress of rhetoric," and "interpreter of theology." Parallel with the study of this Latin grammar, *The Distichs of Cato* were studied. The Distichs, also in Latin, were used as a first Latin reader from the early Middle Ages until after the opening of modern times. This collection of simple verses, as now extant, comprises four books, of forty, thirty-one, twenty-four, and forty-nine morality and religious couplets, with short prefaces. After a foreword and fifty-six short proverbs, Book I opens as follows:

> If God a spirit is as poets sing,
> With mind kept pure make thou thy offering.
> Be oft awake: from too much sleep abstain,
> For vice from sloth doth ever nurture gain.[1]

The extensive character of grammar is shown by the divisions assigned to it by the authors of the leading textbooks of the Middle Ages, Donatus of the fourth century, and Priscian of the sixth. Donatus treated the topics now included in grammar and rhetoric and to these Priscian added literary analysis and interpretation. This content was supplemented by dialogues or colloquies, fables, proverbs, and maxims. The following samples from the three most popular mediæval books on grammar and related subjects sound in part familiar and in part unfamiliar to modern ears.

[1] From W. J. Chase's translation, *op. cit.*, p. 17. *University of Wisconsin Studies in the Social Sciences and History*, No. 7, 1922.

Two versions of *Ars Grammatici* by Donatus have come down to us. The longer form, *Ars Maior*, opens with a definition of the human voice after which letters are discussed in some detail: "A letter," says Donatus, "is the smallest part of an articulate sound. Some of the letters are called vowels; others are called consonants. Of the consonants, some are semi-vowels, and others are mute," etc.[1] Later sections of Donatus are devoted to syllables, feet, accent, punctuation, parts of speech, and rhetorical matters. Priscian treats of accidence and syntax by the study of Virgil's *Æneid*, which opens with the well-known question, "What part of speech is *arma?*" During the twelfth century, about 1119, Alexander de Villa Dei, the "Aristotle of Grammar," wrote the *Doctrinale*, a book which, for a time, came nearly displacing Donatus and Priscian. This book, which contained 2645 lines, devotes 1073 to etymology, 476 to syntax, and 1095 to quantity, accent, and figures. The relation of the organization of this material to prevailing methods of instruction is illustrated by the fact that the popularity of this book was due largely to two features: its metrical form rendered it easier to memorize; and the nicety of its logic accorded with the disputatious interests of mediæval schoolmasters.[2] All these textbooks were in Latin, and, as the pupils rarely had copies, it was necessary for them to memorize the contents or else copy from the master's dictation. After some proficiency had been acquired, still other works were studied at the larger schools, as at St. Gall, where many of the standard Latin authors were read.

[1] Keilii, Heinrici. *Grammatici Latini.* Leipsic, 1864. Vol. IV. P. 367. For a complete translation and critical discussion of *Ars Minor*, see W. J. Chase, *The Ars Minor of Donatus. University of Wisconsin Studies in the Social Sciences and History*, No. 11, 1926.

[2] Cf. K. J. Neudeker, *Das Doctrinale.* 1885.

2. *Rhetoric.* This subject, so important in a Greek democracy, often declined in the Middle Ages to mere drawing up of business forms by priests. It had, it is true, a distinct function in the preparation of the preacher, but many mediævalists disdained an art which taught the user only to proclaim that which any inspired preacher must unaided deliver with fervor and effect. At its best, however, as exemplified by Maurus, rhetoric was the art of employing discourse effectively in daily affairs. Although Maurus defined rhetoric in secular terms, he regarded it as very important in ecclesiastical instruction. As far as the preacher expresses himself eloquently, adequately, and impressively, he owes his skill to this art. Therefore, he who attains a mastery of rhetoric, instead of being culpable, is to be praised for acquiring power the better to proclaim the word of God. Furthermore, one may, through rhetoric, prove anything true or false. This being the case, the preacher, more than anyone else, must master rhetoric in order that he may not stand defenseless in the presence of false witnesses, and that he may not fail to present truth most effectively to his hearers. Indeed Maurus feared, that, without this art, even listening to the presentation of truth might become a wearisome exercise and faith an impossibility.[1]

Brunetto Latini (1220–1294?) devoted Part III of his compend of universal knowledge to rhetoric. As conceived by Brunetto, this subject was allied with politics. This conception of the general scholar parallels the conception of rhetoric as the handmaid of religion of Maurus the churchman.[2]

[1] Maurus, Rhabanus. *Unterweisung der Geistlichen.* This epistle on the education of the clergy is contained in *Sammlung der bedeutendsten pädagogischen Schriften* edited by Schultz, Ganzer, and Keller. The strong religious sentiment which pervades this passage continues throughout this epistle and indicates the serious religious character of the seven liberal arts.

[2] See Paul Monroe's *Cyclopedia of Education* under *Rhetoric.*

3. *Logic.* As the mediæval scholar had many occasions upon which to defend his faith, logic — or dialectics as it was often called — was needed in the training for disputation. Important as this study was in training for the social life of the Middle Ages, it now has little attention from modern secondary-school curriculum makers. Whether it should regain in part its former place, depends upon the present need for analysis of arguments whether printed or spoken and in part upon the question as to whether this art has been taken over in sufficient quantity by other subjects. Quite certain it is that the present day demands fine analyses of arguments. If, however, teachers of our day utilize such material as is now available, as in social studies and literature, the alleged practical values of logic of the old schools is not without a place in the modern school.

4. *Geometry.* The character of mediæval geometry seems to receive a just treatment in the following account which is based upon Maurus. This subject is an exposition of form, beginning with observation and continuing by demonstration. The high origin of geometry is attested by philosophers who declare that Jupiter made use of it in his works. This allegation by the philosophers caused Maurus some uneasiness, and he is constrained to deny Jupiter's use of this science in favor of use by the Christian God. If this alteration in the premises is allowed, Maurus holds that the Holy Trinity also employs geometry in bestowing forms and images upon its creatures. Likewise, the demands of this rigorous science determine the course of the moving stars and the planets and assign unalterable positions to the fixed stars. Indeed, every well-ordered arrangement is determined by, and can be reduced to, the rules of geometry. The religious significance of this subject is set forth still

further by Maurus, as he shows its significance in the building of the tabernacle and the temple. In those important edifices were used circles, spheres, hemispheres, quadrangles, and other figures. Hence, the pursuit of geometry, if properly correlated with religious works, will yield much for the spiritual welfare of the clergy.[1]

5. *Arithmetic.* The arithmetic of the early Middle Ages has little more academic significance than that of the Greeks. Its special value lay in computing the problems of the Scriptures and the date of Easter, as well as from the mystical properties of certain numbers and their combinations. Capella well illustrates the addle-pated arithmetician of his age:

> What shall I call four? In which is a certain perfection of solidarity; for it is composed of length and depth, and a full decade is made up from those four numbers added together in order; that is, from one, two, three, four. Similarly a hundred is made up of the four decades, that is, ten, twenty, thirty, forty, which are a hundred; and again four numbers from a hundred on amount to a thousand, that is, 100, 200, 300, 400. So ten thousand is made up of another series. What is to be said of the fact that there are four seasons of the year, four quarters of the heavens, and four principles of the elements? There are also four ages of man, four vices, and four virtues.[2]

Of a collection of "Problems for Quickening the Mind," Cajori gives the following account:

> The following is a specimen of these "Problems": A dog chasing a rabbit, which has a start of 150 feet, jumps 9 feet every time the rabbit jumps 7. In order to determine in how many leaps the dog overtakes the rabbit, 150 is to be divided by 2. In this collection of problems, the areas of triangular and quadrangular

[1] *Ibid.*

[2] Martianus Capella, translated by L. F. Anderson in "A Study of Mediæval Schools and Schoolwork." *The Pedagogical Seminary*, XIV, 223–282, 1907.

pieces of land are found by the same formulas of approximation as those used by the Egyptians and given by Boethius in his geometry. An old problem is the "cistern-problem" (given the time in which several pipes can fill a cistern singly, to find the time in which they fill it jointly), which has been found previously in Heron, in the Greek *Anthology*, and in Hindu works. Many of the problems show that the collection was compiled chiefly from Roman sources. The problem which, on account of its uniqueness, gives the most positive testimony regarding the Roman origin is that on the interpretation of a will in a case where twins are born. The problem is identical with the Roman, except that different ratios are chosen. Of the exercises for recreation we mention the one of the wolf, goat, and cabbage, to be rowed across a river in a boat holding only one besides the ferry-man. Query: How must he carry them across so that the goat shall not eat the cabbage, nor the wolf the goat? The solutions of the "problems for quickening the mind" require no further knowledge than the recollection of some few formulas used in surveying, the ability to solve linear equations and to perform the four fundamental operations with integers. Extraction of roots was nowhere demanded; fractions hardly ever occur.[1]

6. *Astronomy.* Two reasons make a discussion of astronomy desirable here: first, its connection with astrology; and, second, its connection with theology. That is, mediæval astronomy shows the danger to which a subject may lay itself open by treading where only guessing thrives, and, at the same time, it shows the danger of making an institutional matter of questionable suppositions. An earth-centered universe as a theoretical postulate hindered all except the rare original thinker or investigator; the union of this false postulate with theological dogma discouraged the original thinker from disclosing any scientific variations in thinking.

[1] Cajori, Florian. *A History of Mathematics.* The Macmillan Company, 1924. Pp. 114–115.

Reference to the disparity between the findings of the greatest astronomers and the astronomy of the schools may also be mentioned in passing. Throughout the Middle Ages there were astronomers like Isidore of the seventh century who "repeatedly mentions that heaven is a sphere rotating round an axis and having the spherical earth in its centre."[1] The earth's sphericity seems, however, to have remained a dark secret as far as schoolboys were concerned. The alleged failure of the modern schools to offer the best that science can provide has thus a parallel in an age which we may not wish to emulate.

7. *Music.* The value of music to the church gave this art an obvious place in the mediæval school. As Maurus indicates, music aids in training for the reading of the psalms, as well as in the strictly musical portion of the ritual. While the "choir school" offered this practical training, there was provided also a certain amount of theoretical information about intervals and the "movements" of certain tones within a scale. As heaven and earth and all that moves therein is "nothing but music," and as the "world was created by music and can be ruled by it,"[2] no further sanction was needed for the study of this noble art!

In addition to religion which supplemented the seven liberal arts as a school subject, each of the arts themselves included certain content not now offered in these respective courses. As grammar included what is now known as language and literature, so astronomy included much science now classified under different names. Masters called upon their own resources to kindle interest and to add content to all the arts. Alcuin, for example, enriched the courses con-

[1] Singer, Charles. *Studies in the History and Method of Science.* Clarendon Press, 1921. Vol. II, p. 104 The passage quoted is from J. L. E. Dreyer's chapter on "Mediæval Astronomy."

[2] Maurus in Painter's translation, *op. cit.*, p. 167.

siderably in the school of Charles the Great. Some portions of the enrichment must have added mirth to the life of the boys. Among his colloquies, these passages occur:

P. What is faith?	A. The certainty of things unknown and wonderful.
P. What is wonderful?	A. I lately saw a man stand and a dead man walk who never existed.
P. How can this be? Please explain.	A. It was an image in the water.
P. Why did I not understand this by myself, considering that I have often seen such a man?	A. Because you are a good young man, and quick of perception, I shall speak to you of other wonderful things. Try, if you can, to find them out by yourself.
P. I will try, but if I fail, please correct me.	A. Rest assured that I will do as you desire. A person unknown to me has spoken to me without tongue or voice; he never existed before, does not exist now, and never will exist hereafter; I never heard nor saw him.
P. You dreamt, master, I think; did you?	A. Right, my son. Now hear another. I saw the dead bring forth the living, and the breath of the living devour the dead.
P. By the friction of boughs fire is produced, which devours them.	A. That is true. . . ."[1]

There is little reason to believe that the recorded content of these courses constituted all the content. How much of informal discussion accompanied the foregoing colloquy is not indicated. Even in that somewhat unscholarly age, reason prompts us to believe that further historical re-

[1] Mombert, J. J. *A History of Charles the Great.* D. Appleton and Company, 1888. P. 247.

search will show that those years were far more scholarly than they have been judged to be.[1]

Curriculum developments during the later mediæval centuries. Mediæval Europe has been variously characterized as a land of gloom and as a guardian of light. The early mediæval centuries have been called the Dark Ages, while the thirteenth century has been styled the "greatest of centuries." [2] Whether or not the mediæval era appears as a plateau in human progress, a slough of despond, or a circuitous ascent depends upon one's point of view and clearness of vision — rather upon clearness of vision than upon point of view. Viewed from the vantage ground of competent historians and in the light of mediæval writings, this period is distinguished as one of advancement in new directions and of enormous spread in territorial area — a spread which is, in certain respects, comparable with the modern attempt to extend secondary education to neglected social groups.

The Middle Ages brought forth many new problems and encountered many impediments in the solution of these problems. First, hordes of peoples of low cultural status presented themselves for assimilation — either learned men had to provide for the assimilation of these hordes or the hordes would arrange for the extermination of civilization. Second, ancient education had to adapt itself to new religious conditions — either classical learning had to show its value in promoting the new Christian religion or the new teachers would forget the past. Third, there was much to study, but

[1] The recent increase of knowledge of the Middle Ages by Sandys (*A History of Classical Scholarship*), Duhem (*Le Système du Monde, etc.*), and Singer (*Studies in the History and Method of Science*) may fairly be regarded as indicative that we are just now recovering materials which have lain dormant quite as long as did the works of Aristotle in the "Dark Ages."

[2] Walsh, J. J. *The Thirteenth, the Greatest of Centuries.* Catholic Summer School Press, 1907.

facilities for study were poor — either there must have been a decay of learning or an improvement of conditions. Fourth, there were long periods of neglect of learning by kings and princes; in an age of bellicose tumult, the rulers had little time for the cloister, and rarely could men who looked toward scholarship choose else but to live apart from politics and trade.

Confronted with problems such as these, what were the aims of mediæval men? By what means did they plan to solve their problems? Two aims are outstanding as far as political and ecclesiastical leaders were concerned: these men sought first to build a universal empire, and, second, to establish firmly a universal church. A third aim, that of a few notable statesmen, was to establish schools worthy of their realms. A fourth aim, that of mastering eastern lore, dominated a few scholars. Besides, there were the aim of the "gentle" knight to perform noble services graciously, and the aim of the traveler — pious pilgrim or rash Viking — to explore, and possibly plunder, the lands beyond their own.

But mediævalism was not a static issue composed of problems all with their solutions patent to the wise. In addition to problems more or less clearly seen and aims which roughly paralleled the problems, there were many moving variables — human forces which at times represented the practical man's escape from the real problems. Toward the later centuries of the Middle Ages, such forces took form in the rise of towns, the development of trade, the growth of industry, and the formation of guilds; the refining of princes, the extension of travel and education and culture; the rationalization of theology and the reconciliation of religion with a rigorous logic; and the development of a "practical" curriculum.

One mediæval institution and only one was partially fit

for the age. Kings neglected learning, warriors despoiled the schools and burned the books, traders found no profit in learning which produced no successful alchemists, the unorganized masses had no means of asking for the learning away from which they most certainly would have turned. To the church, therefore, fell a double duty as defender of the new faith and preserver of ancient lore. These two, faith and ancient lore, she had to balance, and in doing so the faith was not forgotten even if pagan learning was forced to suffer. Mediæval conformists had to scrutinize the curricula of their day to exclude and eliminate each item that was judged irrelevant to churchly learning. This care was due in part to the fact that pagan lore was believed to be spiritually harmful as well as ecclesiastically useless. When, for example, Gregory of the sixth century found a bishop teaching grammar — language and literature — he wrote, "I have been informed — I cannot repeat it without shame — that you, my brother, are teaching certain persons grammar. At this I was so grieved and felt so strong disgust that my former feelings were changed to groans and sadness; because the same mouth cannot utter the praises of Jupiter and Christ." [1] But not all churchmen shared Gregory's objections to the classics. Anselm, archbishop of Canterbury in the eleventh century, recommended the study of Virgil and other pagan writers.[2] Furthermore, as an aid to classical study, the laity especially as represented by leaders such as Charles the Great, Alfred the Great, and Otto the Great by mandate or example, stimulated the study of the seven liberal arts. Contrasting examples can thus be cited of men

[1] Gregory, I. *Ep. ad Desiderium*, ix, 48. Here quoted from D. C. Munro, "The Attitude of the Western Church toward the Study of Latin Classics in the Early Middle Ages." *American Society of Church History*, VIII, p. 186, 1897. See also Sandys, *op. cit.*

[2] *Ibid.*, p. 188.

who like Hermannus Contractus wished on his deathbed to reread Cicero; and Odo of Cluny, who likened Virgil to "a beautiful vase full of ugly adders." [1] The obvious utility of Latin finally overcame the bigoted opposition to it, so that by the twelfth century the classics were copied, quoted, studied, and discussed by scholars, and sometimes employed even in support of the Scriptures. In addition to the intrinsic lure of the classics and their utility, there was already a belief in their disciplinary power. Just as Plato wished only minds whetted by geometry, so certain scholar-teachers of the Middle Ages wished minds cleared and sharpened by the classics.[2]

CHART II

MEDIÆVAL CONTRIBUTORS TO SECONDARY SCHOOL CURRICULA AND THE REVIVALS OF LEARNING

Seventh Century

Columba, founder of Irish and Scotch centers of learning
Columban, founder of north Italian center of learning
Gallus, founder of monastery famed for its learning
Isidore of Seville, encyclopedist and versed in Latin and Greek
Theodore of Tarsus, patron of Greek in England

Eighth Century

Bede, historian and "most general scholar of his age"
Boniface, scholar and "apostle of Germany"
Alcuin, teacher, bibliophile, Greek and Latin scholar
Charles the Great (d. 814), school administrator and patron of learning

Ninth Century

Al-Khowarizmi, mathematician and astronomer
Dicuil, popular Irish geographer
Rabanus Maurus, teacher and author of books on education
Servetus Lupus, protagonist of letters
Alfred the Great, first translator into English
John the Scot, teacher and scholar of Greek and Latin

[1] *Ibid.*, pp. 190–192.
[2] Cf. Peter of Blois (d. 1212), *Epistolae* 101; Migne, *Patroloiae Lat.*, 207, 311.

Tenth Century

Massoudy, travel-writer; sphericist
Gerbert, scholar and patron of science, mathematics, music, and medicine

Eleventh Century

Avicenna, leader in medical literature
Constantinus Africanus, "restorer of medical literature in the West"
Omar Khayyam, mathematician and poet
Guido di Arezzo, leader in musical notation
Anselm, "the father of scholaticism"
Roscellinus, early scholastic and teacher

Twelfth Century

Abelard, dialectician, teacher, author, and with William of Champeaux a leader in the university movement
Adelard of Bath, scholar, traveler, and pioneer translator of Arabic
John of Salisbury, scholar, publicist, and protagonist of Greek
Hugo of St. Victor, student of education and scholar
Walter Map, British writer of prose and poetry
Chrêtien de Troies, French poet of Holy Grail
Gerard of Cremona, translator of Ptolemy's *Almagest* and scores of other works
Averroës, Moorish popularizer of Aristotle
Moses Maimonides, physician and student of Aristotle
Daniel Morley, carrier of Arabic books to England
Robert of Chester, translator of Al-Khowarizmi's *Algebra*

Thirteenth Century

Alexander Neckam, encyclopedist
Wolfram von Eschenbach, poet-author of popular version of *Parsifal*
Thomas Aquinas, the "Angelic Doctor"
Albertus Magnus, schoolman and scientist
Robert Grosseteste, scholar of Latin and Greek, and teacher of Roger Bacon
Roger Bacon, a herald of modern experimental science
Alphonso the Wise, scholar and patron of science
John of Garland, Latin lexicographer and teacher
Marco Polo, geographer

So it was, therefore, that learning persisted and at the hands of distinguished champions shone forth in a revival. The accompanying chart indicates to the student of mediæval history the strength of the revivals. Each of the

scholars here catalogued represents a revival in his branch of study. Gallus as founder of a seat of learning, Gerbert and Al-Khowarizmi as mathematicians, Dicuil and Massoudy as geographers, Gerard as translator, and John of Salisbury as lover of the classics — all these, like the many others catalogued in the chart, represent a deepening of knowledge, a spread of learning, or both. These transmitters and pioneers of scholarship were notably successful workers in science, mathematics, literature, music, and art.

In science, men questioned the dogmatism of the older writers and conducted experiments for themselves. Although no scientist of these centuries shook off the magic of his age, many men disclosed certain secrets which had before been hidden in darkness and mystery. Albertus Magnus, for example, by his own experiments exposed many false notions about science; for instance, by actual experimentation he found that ostriches did not, as alleged, eat and digest iron,[1] although he did give credence to the famous tale of the toad and the emerald:

> An emerald was recently seen among us, small in size but marvelous in beauty. When its virtue was to be tested, someone stepped forth and said that, if a circle was made about a toad with the emerald and then the stone was set before the toad's eyes, one of two things would happen. Either the stone, if of weak virtue, would be broken by the gaze of the toad; or the toad would burst, if the stone was possessed of full natural vigor. Without delay things were arranged as he bade; and after a short lapse of time, during which the toad kept its eye unswervingly upon the gem, the latter began to crack like a nut and a portion of it flew from the ring. Then the toad, which had stood immovable hitherto, withdrew as if it had been freed from the influence of the gem.[2]

[1] *De animalibus*, XXIII, i, 104.

[2] Here quoted from Lynn Thorndike, *History of Magic and Experimental Science*. The Macmillan Company, 1923, vol. II, pp. 546–547.

Likewise, Roger Bacon, who inspired much scientific experimentation, accepted the story of a wise man who believed with others that animals when ill or injured sought their natural remedies. This story was that a man, in seeking an herb of great virtue, dissected a serpent, leaving intact only the skin of its belly — the snake then crawled as well as it could to the herb and, upon touching it, was immediately made whole.[1] Another scientist who looked to fact while he held to fancy was the geographer Massoudy (Al-Mas'udi). Massoudy, though a keen observer and a man versed in mathematical geography, held with Al-Khowarizmi the "dome theory" — or belief in an earth-summit in the middle of the known world.[2] In spite of continued error in some matters, these men added to the reliable knowledge of physics, chemistry, biology, geography, and astronomy.

In mathematics there was the transmission of the unified treatment of arithmetic, algebra, and geometry which came from Pythagoras by way of Arabia and Spain to mediæval Europe.[3] Of the greatest importance was the transmission of the work of Al-Khowarizmi, because "Through his arithmetic, presenting the Hindu art of reckoning, he revolutionized the common processes of calculation and through his algebra he laid the foundation for modern analyses."[4]

In the development of new literature, the vernaculars of the northern countries produced during this period such undying masterpieces as *Parsifal* and *Tristram.* These tales,

[1] *The Opus Majus of Roger Bacon.* Edited by J. H. Bridges. Williams and Norgate, 1900. Latin text. Vol. II, p. 208.

[2] Cf. Beazley, C. R. *The Dawn of Modern Geography.* John Murray, London, 1897. Pp. 455–468.

[3] Cf. the Introduction to L. C. Karpinski's translation of *Robert of Chester's Latin Translation of the Algebra of Al-Khowarizmi.* The Macmillan Company, 1915.

[4] *Ibid.*, p. 33.

as related by Wolfram von Eschenbach and Gottfried von Strassburg, indicated the wealth of literary material which lay in the folklore of the northern peoples and the possibility of using the new languages in the production of enduring literature.[1]

In music Guido d'Arezzo and others of the eleventh, twelfth, and thirteenth centuries applied the syllables *ut, re, mi, fa, sol, la,* and the successive tones of every hexachord; and, by always using mi-fa to cover the half-step, developed a plan similar to the modern "movable *do*." Musical notation was as greatly improved during this period as was arithmetical notation. In addition to bringing about these mechanical improvements in music study, this period developed the art of melodic ornamentation and began the use of modern harmonic and contrapuntal arrangements.

In the works of mediæval architects and craftsmen are found evidences of skill, patience, and industry which excel much of the work of the greatest men of modern times. Then it was that the work of gilds was brought to its highest point. Periods of apprenticeship varied according to the trade and locality. The cooks of Paris required only two years' service, "the carpenters four, the chandlers six, the embroiderers eight, the goldsmiths ten. A seven years apprenticeship, which had become universal amongst London crafts, was adopted as the national standard in the sixteenth century. On the continent a much shorter period of from two to six years was supplemented by the requirement of from three to five years' travel in search of fuller experience."[2]

[1] See H. O. Taylor, *The Mediæval Mind.* The Macmillan Company, 1911. Pp. 5–28 give an abstract of the *Parsifal* of Wolfram.

[2] Monroe, Paul. *Cyclopedia of Education.* The Macmillan Company, 1911–1913. Vol. III, p. 109. For a full account of gilds, see George Unwin, *Gilds and Companies of London.* London, 1908.

A significant curriculum problem in the church schools of the twelfth and thirteenth centuries grew out of the crowding of the curriculum and the demand for practical courses. It was the belief of many teachers that boys could profitably economize their time by shortening or omitting their work in grammar. The economy thus effected enabled the boys to proceed more directly to the popular "modern" courses in business. Chief of these new courses was correspondence — the "art" of letter writing came near overshadowing the training in language and composition as then included in grammar. Other modern subjects, as law and medicine, were opened to boys as soon as the rudiments of reading were mastered. To make the situation worse for sound scholarship, the teachers of the practical subjects flagrantly advertised their powers and the creditable opportunities for advancement in the practice of the law, medicine, and documentary writing. Indeed, the interest in short cuts to scholarship and the plea for practical subjects during the twelfth and thirteenth centuries are so similar to those of modern times that one may well seek counsel here in the handling of the problems of the present day.[1] It was this decline of interest in grammar that inspired Henri d'Andeli of the thirteenth century to produce *The Battle of the Seven Liberal Arts*.[2] In this account of an academic battle, grammar is humbled and withdraws "into Egypt, where she was born."[3]

Of the general aims of the Middle Ages already named, those which referred to the universal church, to the acquisi-

[1] Cf. L. J. Paetow, *The Arts Course at Mediæval Universities with Special Reference to Grammar and Rhetoric. University of Illinois Studies*, Vol. III, No. 7. 1910.

[2] Translated by L. J. Paetow. *Memoirs of the University of California*, Vol. IV, No. 1. 1914. This volume contains a valuable introduction which describes the educational conditions of the thirteenth century.

[3] Line 407.

tion, expansion, and transmission of Greek and Arabic learning, to chivalry, and to travel affected the lines of curriculum development of this period.[1] Only a few monarchs attempted to translate the aim of a universal empire into terms which affected the curricula of their times. By adopting Greek and Arabic learning this period distinguished itself from the early Middle Ages and at the same time prepared the way for the greater revival of letters in the fifteenth century and of science in the sixteenth. As an age of curriculum-pioneering, this age should be venerated for its systematization of knowledge as well as for its great dissemination of mathematics and science through western Europe.

An appraisal of Roman and mediæval curriculum development. During the fifteen centuries which preceded the year 1300 many changes took place in secondary school curricula. Varied though the purposes of the Romans and the mediævalists were, their characteristic skill in selecting and organizing distinguishes this long era as one of standardization of existing materials rather than as one of fertility in the discovery of new materials. They were not, however, wholly lacking in the production of new subject matter.

The early centuries of this period witnessed the addition of Roman literature to the standard program of European schools. As this literature provided a masterly treatment of subjects as diverse as agriculture and the world of departed spirits, it constitutes one of the world's outstanding gifts to civilization. The mediæval centuries witnessed the change from pagan to Christian subject matter in things religious. The reëntry of large divisions of Greek learning,

[1] Chivalric education will be discussed in Chapter IV in connection with the education of the gentry.

the further developments of science and vernacular literature, the continued spirit of encyclopedism, and the addition of works of the Christian fathers mark the mediæval age as one of preservation and of some originality.

Ample reasons exist, however, for the prevailing notion that curricula declined in effectiveness during the Middle Ages. First, throughout the later years of this long period, the classics were so completely mechanized by teaching procedure that the original beauty of their lines was lost. But this loss of beauty was not deplored because the purpose of teachers during the mediæval period was not to teach literature; instead, their purpose was to develop facility in the use of the Latin language. Since the church objected to having her sons find comfort in pagan literature, few mediævalists seem to have risen above this language drill in studying the classics. This condition is not a necessary indication, however, that mediæval teaching was not good; rather, it reflects merely the policy of employing the classics for purposes of drill upon language forms and usage. For this purpose mediævalists found Latin classics effective.

Second, this attitude toward literature is only one example of the results of the dominance of schools by a young and undisciplined institution. For the church of this period was not in control of her powers; she wielded great physical and mental force, but in matters of scholarship she extended only the protection of the untrained guardian and displayed only the insight of a frontier institution. As the schools, in view of their purposes, betrayed no necessary inefficiency by employing the classics for purposes of drill, so the church betrayed no necessary insincerity or unrighteousness by her narrowly intolerant frontier attitude. In keeping with the times, as already described, life had somehow to be directed. A powerful and timely institution undertook to direct

European development, and the desiccated mediæval curriculum was the result.

Although one can easily find reasons for denouncing the effects of the church upon academic life, one can quite as readily find reasons for exonerating the church from certain defects. The general influence of the church seems to have led to a decline in interest in science, mathematics, literature, fine art, and physical education. The church seems also to have stereotyped the academic treatment of what learning she did tolerate. By neglecting great bodies of important knowledge and stereotyping what she guarded, the church has no light charge against her. She has, however, a wholly different story to relate through the lives and works of some of her greatest leaders. Among the products of the church are Gerbert, the mathematician, John of Salisbury, the scholarly publicist, Roger Bacon, the scientific philosopher, and Dante, the poet. These leaders represent the secular mediæval achievement at its height and indicate that individuals could and did rise above the common spirit of their times. Although the church often stood in the paths of these men, their lives show that strong, scholarly leadership rather than a change in the fundamental principles of the church was the need of this period. Had the mediæval church been granted one hundred years of leadership by Gerbert and Roger Bacon's papal guide, the curricula of modern times could have been produced during any century of the mediæval era. For the church herself exhibited the spirit of her leaders and did not stand as an intrinsically impersonal institution. Owing to a lack of intelligent leadership, the gains of the Middle Ages were slowly made and were often obtained through clandestine activities. Gains there were, nevertheless, in the several branches of science, art and architecture, music and literature, and in

the number of available mathematical documents. A notable reconstruction of higher education took place, and that in turn soon influenced secondary schools. Certain practical forms of education, such as commercial training, were maintained in private venture schools. The territorial extension of knowledge has already been mentioned as a contribution of mediæval times. Unless, however, the spirit of religion has been quite misunderstood in modern times, the mediævalists displayed their greatest lack of skill in teaching this subject which was at the center of all their academic interests.

At its worst this era appears as the silencer of leaders. Free leadership and tolerance of constructive criticism, two essentials of progress, were lacking. At its best this era appears as an age in which undisciplined hordes were yielding to the subtle charms of learning and at times encouraging trained leaders to guide youth in the paths of learning. To these last influences are due the credit for beginning a new era in the fourteenth century.

The ancient Romans organized schools, selected subject matter, and divided the subject matter into teachable units. The later mediævalists bequeathed to modern times a mechanized curriculum consisting of the seven liberal arts. To this bequest were added both deadening traditions and scholarly aspirations. Out of the latter, when combined with the seven liberal arts, came the interests and advancements in literature, science, and mathematics which distinguish most clearly the modern age from mediævalism.

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CHAPTER IV

CURRICULA OF EARLY MODERN TIMES

The first modern scholar. Every scholar whom genius marks begets within his age a revival of learning. Thus it was that the mediæval genius revived for every century of that era the learning of the past and kept aglow the zeal for deeper knowledge in his day. Either the century which produced the indefatigable translator, Gerard of Cremona, or the century which gave light to that forerunner of modern science, Roger Bacon, may properly be styled an era of revival. Indeed, the names of Isidore, Charles the Great, and Alfred, Gerbert, and so throughout the names recorded in Chart II, all stand for men who prompted the revivals of their times. It was by these recurring stimuli to learning that modern times were generated. The man born out of the long era of gestation was Petrarch — the fourteenth-century scholar who served as herald of the day when human life, human thought, and human works could be frankly used in directing adolescent schoolboys.

In Petrarch's day were Boccaccio, who served as gleaner of fascinating tales and still serves as the inspirer of the novelist; Chaucer, who bedecked his native land with verse; and Vergerius, who showed the first modern teacher what to teach. As curriculum makers, these men announced a program which had been faintly seen by John of Salisbury and perhaps by other mediævalists. Even these fourteenth-century men were not at one in estimating the worth of their own native tongues, nor were they quite agreed as

individuals to desert traditions long established; their hesitancy illustrates the difficulty which a radical change in curricula always entails. Men of their times, these men did, however, represent a balance of spirit seldom if ever found before them. This spirit leaned toward modern times and indicated the decline of mediæval scholarship; although many mediævalists could have developed modern schools; always in their centuries the balance lay with tradition. New learning then made its way but slowly and in the face of tradition-bound scholars. In Petrarch's day and afterward, new learning made its way rapidly, because scholars who never knew the bonds of mediæval Europe pointed out the way to the Italian renaissance.

In characterizing Petrarch, the father of humanism, and showing the differences between mediæval and early modern influences, Robinson says:

> John of Salisbury, for example, in the twelfth century, had known almost as many of the Roman poets and moralists and historians as Petrarch himself. He had known them, however, and used them, in a very different fashion. He had read them with no surrender to their charm, and no response to their views concerning life and its uses. . . . But with Petrarch it was otherwise. He first, among the men of the Middle Ages, was endowed with a passionate love for the beauty of ancient literature, and an entire sympathy with its ruling ideas, and at the same time, it must be observed, with a saving incapacity to foresee the disintegration of thought and faith that in the long run would inevitably result from such sympathy.[1]

Even Petrarch was reluctant to give up the ancient language of his Roman ancestors and adopt the language of his day. Petrarch's comments upon his own vernacular and upon Latin are also especially significant, because he

[1] Robinson, J. H. and Rolfe, H. W. *Petrarch: the First Modern Scholar and Man of Letters.* G. P. Putnam's Sons (second edition), 1914. Pp. 227–228.

appreciated so fully the merits of his native tongue; for he was familiar with the work of Dante in Italian and had himself written, as a young man, in the same language. His attitude is of importance also as showing the same reluctance to adopt his vernacular as Englishmen of the sixteenth century showed in adopting the English language. As Petrarch exhibits in several other passages the same attitude as that presented in the following excerpt from a letter to Boccaccio about 1336, this may properly be regarded as characteristic.

To be sure, the Latin, in both prose and poetry, is undoubtedly the nobler language, but for that very reason it has been so thoroughly developed by earlier writers that we nor anyone else may expect to add very much to it. The vernacular, on the other hand, has but recently been discovered, and, though it has been ravaged by many, it still remains uncultivated, in spite of a few earnest labourers, and still shows itself capable of much improvement and enrichment. Stimulated by this thought, and by the enterprise of youth, I began an extensive work in that language. I laid the foundations of the structure, and got together my lime and stones and wood. And then I began to consider a little more carefully the times in which we live, the fact that our age is the mother of pride and indolence, and that the ability of vainglorious fellows who would be my judges, and the peculiar grace of delivery is such that they can hardly be said to recite the writings of others, but rather to mangle them. Hearing their performances again and again, and turning the matter over in my mind, I concluded at length that I was building upon unstable and shifting sand, and should simply waste my labours and see the work of my hands levelled by the common herd. Like one who finds a great serpent across his track, I stopped and changed my route — for a higher and more direct one, I hope. Although the short things I once wrote in the vulgar tongue are, as I have said, so scattered that they now belong to the public rather than to me, I shall take precautions against having my more important works torn to pieces in the same way.[1]

[1] Robinson and Rolfe, *op. cit.*, 207–208.

The bases of the revival of learning. A recital of certain conditions which existed during the twelfth, thirteenth, fourteenth, and fifteenth centuries will serve at once to indicate the continuity of modern learning with that of the Middle Ages and also to explain the directions in which the early modern curriculum expanded. First among these conditions is the emancipation, partial at least, from the narrowing influence of early interpretations of the function of learning. Although much of the force given to this narrowing influence was derived from the power of the church, it should be understood that the church was not intrinsically concerned with this matter. The leaders of the church were at times hindered by their own prejudices or ignorance and were probably influenced by their personal wishes; when such leaders expressed their views, as did the scholarly Augustine, these views became, in the hands of other men, little less than ecclesiastical dogma. We have already seen how such views affected the attitude of certain churchmen toward the pagan classics. Among other men there was great consternation in regard to the use of the Arabic system of notation. Under cover of dogma such men used the church to shield themselves and their generations from information which, owing to prejudice or laziness, they did not desire to master. It would probably be unfair not to grant that objections to changes in academic lore sometimes arose from deeply sincere men. Be that as it may, the ascent of the learned Gerbert to the papal chair in the tenth century shows how little real significance such matters had to the church. Viewing the problem from a different angle, it may be noted that had not the church served as guardian of conservatism, some other institution would have done so, else learning would have perished. It is questionable whether any other institution could have

performed this service as well as did the church. Repeated demonstrations of the fact that one could be a broadly trained scholar or protagonist of learning and also a reputable churchman seem to have been necessary to convince men of the wisdom of freeing scholarship from dogmatic restrictions. Fortunately for the permanence of the revival of learning, these demonstrations and their accompanying revivals took place within the church. At best learning could advance but slowly; occasional misfortunes were as inevitable then as they are now — if setbacks were more frequent then than they are now, it was probably because of men's slight experience in dealing with knowledge. At any rate, by the fifteenth century the church found men of humanistic learning more valuable as allies than as enemies, and did not hesitate to raise to her highest offices men who were trained in and sympathetic with the new Greek learning.

Second, there developed during the later mediæval centuries an interest in distinctly secular learning. Besides knowledge of law, medicine, geography, architecture, and the practical arts, which as already stated developed with occupational needs, this interest in secular learning extended to matters such as heraldry and social training in connection with chivalry, and to literature, science, and mathematics as branches of "pure" learning. Interest in the last named subjects was shown by the zealous search in Italy, Greece, and the northern countries for lost manuscripts. Discoveries were hailed with delight such as scholars now experience upon the discovery of an ancient Egyptian treasure house. Additions to literary knowledge were made and disseminated by lecturers, such as Filelfo, 1429, trained in Greece. "Such a lecturer did not, as a rule, confine his labours to any one place, but accepted invitations from several cities in succession. This method of teaching began immediately after

Petrarch. In the earlier days of humanism it was a necessity; there was no other way in which the first elements of the new learning could be diffused. Such a lecturer as Manuel, Chrysoloras, or Giovanni di Conversino appealed to an enthusiasm which was still in its youth. By such men the seeds of humanism were sown far and wide."[1] In such a lecture students were introduced, for example, to a certain portion of Cicero's text which was dictated to them. Then followed "a commentary, dealing with grammar, with the usage of words, and with everything in the subject matter which needed to be explained or illustrated. Thus, at the end of such a course, the lecturer would have dictated a fully annotated edition of the classical book, or portion of a book, which he was treating; and the diligent student would have translated it."[2] Although of less immediate importance for the revival of learning, the literary birth of vernacular languages was an element soon to be reckoned with in secondary schools.

Third, important patrons of secular learning encouraged, by the founding of academies, the revival of ancient lore, for, says Jebb, "it should be remembered that humanism was not cradled in the bosom of Universities."[3] One of the most important of these academies, that at Mantua, will be described later; another was that of Lorenzo de Medici in Florence. In the academies, ancient literature and art were studied, criticized, and employed as models for new writings.

Fourth, this period witnessed a reconstruction of subject matter in terms of the needs and interests of the times. Such a reconstruction of ecclesiastical learning for universities had already taken place under the direction of such men as Abelard. At the beginning of modern times, a reconstruction of materials for secondary schools was

[1] R. C. Jebb in *The Cambridge Modern History.* The Macmillan Company, 1907. P. 553.
[2] *Ibid.*, p. 554. [3] *Ibid.*, p. 540.

occasioned partly by the increased volume of subject matter and partly by the shifting of educational objectives to matters of literary scholarship rather than to scholarship for ecclesiastical purposes.

Fifth, the art of printing was discovered. The activity of Aldo Manuzio, the publisher, as a disseminator of the classics may be contrasted with that of Filelfo the lecturer of 1429. Aldo began his series of Greek editions in 1493 with the *Hero and Leander* of Musæus; next came the whole of Hesiod, thirty idylls by Theocritus, poems by Theognis, five volumes of Aristotle, nine plays of Aristophanes, the works of Thucydides, Sophocles, Herodotus, Zenophon — all these productions within one decade. The prices of the volumes ranged from only about twenty-five cents to one dollar of our money.[1] The importance of the art of printing in the territorial expansion of learning is so obvious that it needs only to be mentioned here.

Sixth, humanism, a symbol of freedom to think, feel, and express oneself through literary studies, was the dominant characteristic of the Italian revival of learning. The humanist as neo-pagan became later a pedantic and narrow-minded follower of the past, but the humanist of Petrarch's type "advocated the study of the classics as the key to a larger mental life, not contrary to the Christian, but auxiliary to it; one which should educate and exercise men's highest faculties."[2] As Petrarch himself said in a letter to Boccaccio, "While I know that many have become famous for piety without learning, at the same time I have known of no one who has been prevented by literature from following the path of holiness."[3]

In summary, six main bases were laid for modern times: (1) a broadened interpretation of the function of learning;

[1] *Ibid.*, p. 562. [2] *Ibid.*, p. 539. [3] Robinson and Rolfe, *op. cit.*, p. 393.

(2) an interest in secular learning; (3) the revival of ancient learning; (4) reconstruction of subject matter in terms of new needs and interests; (5) the use of printing; and (6) the cultivation of the humanistic attitude toward literature. Petrarch has been described as the first modern man because he embodied all these bases save the fifth. The work of Vittorino da Feltre will be discussed in the next section because he stands among the forerunners of those who as teachers disseminated the spirit of humanism. It should be noted that Vittorino was a modernist not only in his attitude toward literature, but also in his attitude toward science and mathematics.

The first modern schoolmaster. In 1423 Vittorino da Feltre established at Mantua the first great school of the Renaissance. Vittorino was singularly fitted for conducting the first great modern school. By nature he loved active boys, by training he loved the new learning, in matters of faith he was a devout churchman, in character and disposition he was nearly if not quite without fault. Withal he was an exacting master whose standards of scholarship, religious practices, character, and physical attainments led him to hold his pupils to strict account in all these matters.

Before going to Mantua, Vittorino had come under the influence of *De Ingenuis Moribus* by Vergerius. In this tract, written about 1404, Vergerius dealt with character and its discipline, liberal studies, physical education, recreation, and the art of studying.[1] The following quotation from Woodward is given at this time because it shows the character of both Vergerius and Vittorino and thus orients the reader with reference to this early schoolmaster.[2]

[1] See W. H. Woodward's *Vittorino da Feltre and Other Humanist Educators* for a translation of the entire tract and of other early tracts by Lionardo Bruni, Æneas Sylvius, and Battista Guarino. Cambridge University Press, 1897.

[2] See also Chart III for the names of leaders during this period.

CHART III

Early Modern Men Whose Works Influenced Curricula

Fourteenth Century

Petrarch		Wycliffe
Boccaccio	Vergerius	Chaucer

Fifteenth Century

Vittorino da Feltre		Leonardo da Vinci
Chrysoloras		Reuchlin
Guarino		Pius II
Savonarola		Colet

Sixteenth Century

Erasmus		Ascham
Luther		Montaigne
Copernicus		Peter Ramus
Thomas More		Thomas Elyot
Michel Angelo		Mulcaster
Rabelais		Shakespeare
Melanchthon		Francis Bacon
Vives		Magellan
Sturm	Lily	Kepler

Seventeenth Century

Galileo	Milton
Brinsley	Dury
Harvey	Hartlib
Ratich	Hoole
Comenius	La Salle
Peacham	Boyle
Descartes	Temple

Eighteenth Century

Francke	Franklin
Newton	Priestley
Leibnitz	Watts
Defoe	Adam Smith
Montesquieu	Basedow
Halley	Kant
Pope	Lamarck
Voltaire	Laplace
Linnæus	Humboldt
Rousseau	Pestalozzi
Diderot	Richter

Vergerius, at the outset of our period, had defined a liberal education to be one which enables a man to attain to and pursue a life of moral and intellectual distinction, and which trains and develops his physical powers. Such an education will prepare men for the career of a statesman, of a soldier, or of a simple citizen. But its object is not to train a mere student. This comprehensive aim is obviously suggested by the Greco-Roman ideal although it is at the same time held to be in complete accord with the spirit of the Christian life. In its practical working this education was exhibited in the most developed form in the Mantuan school. Vittorino claimed for his method, following Plutarch, the title of "encyclopædic," in that he definitely purposed the threefold end of the moral, intellectual, and physical training of his pupils.

It was held that the most profound truths in all, or nearly all, departments of life were to be sought for in the ancient Literatures, in which were included the works of the greater ecclesiastical Fathers, so far at least as their religious and moral contents were concerned. So whilst Letters form the dominant study upon the intellectual side, philosophy and the Fathers, the instruction in morals, gymnastic, and military exercises provide for physical culture. At the same time Mathematics, the study of Nature, and Astronomy, have their due place; and music, singing and dancing, the latter with some reserves, are admitted. Drawing is treated as a technical rather than a liberal subject. Eloquence, recitation and reading are cultivated as aids to scholarship and for their own sakes. It is by no means assumed that every student can cover the entire field of learning now thrown open to him. Ill-digested knowledge is condemned, for a restless curiosity that hurries from one subject to another is hurtful to all true progress. But amidst all this variety the essential feature of education consists in systematic discipline and practice. "Natura sin disciplina cæca" was a doctrine universally accepted. Where this is secured, alternation of subjects, and corresponding change of masters, is desirable: indeed intellectual health demands variety. But it still remains true that to unite knowledge with style, to impart fact and truth in literary dress, was the humanist schoolmaster's ideal on the side of erudition.

The curriculum proposed for a woman was, on its moral and intellectual sides, identical with that of a man, with, perhaps, a

little less stress upon Rhetoric and more upon Religion. There was no assumption that a lower standard of attainment is inevitable as a consequence of smaller capacity. It is, however, accepted that only women of leisure or position can expect to enter upon the pursuit of learning with that undivided mind which it demands.[1]

Vittorino, who was born in 1378, four years after the death of Petrarch, distinguished himself while yet a student by his academic ability as a pupil and as a pupil-teacher in Padua under John of Ravenna. At this time there were no great teachers of Greek in Italy, if indeed there were any teachers who knew Greek. For it is recorded that Florence alone of all Italian cities had a teacher of Greek in 1400.[2] There it was that the great Chrysoloras arrived in 1399 and continued to teach Greek until after the opening of the fifteenth century. Some time before 1411 Vittorino received his doctor's degree, although he continued to teach and study mathematics at Padua until 1415.

These years at Padua were full of revelations to all of Italy and especially to the young men who were fortunate enough to be at the center of important academic events. Such was the fortune of Vittorino, and the curriculum of early modern Europe was greatly influenced by this fact. To Padua in 1407 there came the greatest Latin scholar of the time, Gasparino Barzizza. This scholar searched for and found many lost manuscripts and shared with Paduan students the content thereof. Particularly fortunate then was Vittorino to be received into Barzizza's house together with two Greek scholars, George of Trebizond and Francesco Filelfo. Yet another bit of good fortune accompanied Vittorino's work at Padua, for here it was that Vergerius lived and taught. As Vergerius was the author of the most

[1] Woodward, *op. cit.*, pp. 195–198.

[2] Woodward, *op. cit.*, p. 6. This account of Vittorino is drawn largely from Woodward.

significant book of his century on education, as cited above, it was important that Vittorino find this guide to curriculum planning.

In 1415 Vittorino left Padua for Venice, where he taught with Guarino in the first humanist school of Venice. Here, Vittorino studied Greek with Guarino until a year later, when the Plague drove them from the city. Later, from 1418 to 1422, Vittorino taught at Padua, whence he returned to Venice. Soon afterward came the invitation from the worldly Marquis Gonzaga of Mantua to come to that city and establish the modern school which Vittorino directed until his death in 1446.

With a view to the harmonious development of mind, body, and character, he provided his pupils with a broad curriculum. As mentioned above, the Greek notion of an encyclopedic curriculum was here exemplified. One of his pupils, Predilacqua, writes that:

> no subjects of instruction were wanting, and that special masters were provided to secure effective teaching. Arithmetic, which he valued highly for its training in accuracy and businesslike habits of mind, was in the rudimentary stage taught by games, following the practice of the ancient Egyptians, whose method in the subject Vittorino highly commended. Geometry, in which Vittorino had gained a high reputation at Padua, and with which we may believe that he associated the elements of Algebra, he taught in conjunction with drawing, mensuration, and surveying. We hear much less than we should expect of Vittorino's teaching of mathematics, when we consider his interest in the subject and his credit as a master in earlier years. The medal by Pisanello expressly records his fame in this department of knowledge. We are told that he engaged masters to teach the elements of Natural Philosophy and Euclid. At Padua, Mathematics and Astrology had been closely associated. Vittorino discarded Astrology for Astronomy, and lessons on the heavenly bodies were included in the course. Natural history was not neglected, though we may

suppose it to have been of an uncritical sort, like our own sixteenth-century "bestiaries." Music was admitted, although under careful supervision. There was much anxiety amongst educators at this time respecting the moral influence of music and musicians. Indulgence in the art tended, it was feared, to sensuous excitement, or to mere indolence. To listen to music was an excuse for doing nothing; to practice it might lead to loss of complete self-control. Music masters, carefully chosen, paid special attention to those likely to excel. But Vittorino held fast to the Attic distinction between base and elevating harmonies. With these precautions he admitted instrumental music, choral singing, and dancing.[1]

As a matter of course, Latin and Greek received the major emphasis in this school. Since Greek was a very newly revived subject, its presence was one of the signs of modernity. For his course in physical education, Vittorino had the support of Vergerius as well as of classical Greece. Finally, religion was the touchstone of education, yet he was not disturbed by the disparity between the classical and the Christian ideals of life. His tolerance seems to have been due to his ability to identify the thought and morals of ancient times with the ethical teachings of the philosophers; as he could see the consistency of these teachings with the ethics of Christianity, no difficulty arose.

Heralds of learning in the north. No mystery at all enshrouds the spread of learning from Italy to the North. Although communication by travel, books, and missives was far less common than it now is, certain scholars continued to travel and students went abroad to school just as earlier men had done since the time of Thales and Pythagoras and as modern men have done ever since. That a nation which had scholars or students to educate would soon hear of Italian scholarship was inevitable. As certain scholars had gone to Spain and others to Paris in the twelfth century,

[1] Woodward, *op. cit.*, pp. 42–43. Footnotes omitted.

so scholars of the fifteenth and sixteenth centuries went to Italy. Besides these pilgrimages to Italy, there were sojourns of Greeks and Italians in the northern countries. One other condition which facilitated the spread of learning from one nation to another was that which had existed throughout the Middle Ages — the universal use of Latin as the scholar's language.

France was by nature, by language, and by training the best fitted of the northern nations to accept the new learning. So we find that by 1458 Gregory of Tifernus, an Italianated Greek, was appointed as professor of Greek at the University of Paris. Again in 1494 Charles VIII visited Italy and imbibed an enthusiasm for that country and new learning, so that for nearly a hundred years the kings of France were patrons of Italy and her learning. Other scholars who spread the humanities in the sixteenth century in France were Budæus — author and scholarly lexicographer, John Lascaris — the Italian grammarian during the reign of Louis XII, Jerome Alexander — scholar, teacher, editor, and bibliophile, Robert Estienne — scholar and printer, and Turnebus — an editor and teacher who, says Montaigne, "knew more, and knew it better, than any man of his century, or for ages past."[1]

In being transported to Germany, humanism developed two characteristics, the second of which was a major trait throughout the period. These characteristics were an interest in the classics themselves and an interest in science which was the direct outgrowth of the study of men who like Roger Bacon had seen the absolute necessity for learning about achievements of the past before launching out upon unexplored seas. Among this group of devotees to new learning was Peurbach, a student of Arabian trigonometry, the

[1] *Essays.*

author of *New Theories of the Planets* and a student of Ptolemaic astronomy. Peurbach's pupil, Regiomontanus, went to Cardinal Bessarion in Italy, under whom he mastered Greek for the purpose of translating scientific treatises. Like the Polish Copernicus who, during the next generation, studied nine years in Italy, these men depended for their scientific information upon the revival of learning in which fine literature found the largest place.[1]

The interest of Germans in a certain form of religious dogmatism prevented their showing a prompt enthusiasm for the new learning. German students in Italy there were in the fifteenth century, as Agricola and Reuchlin. But it was not until the pope decided a famous case in favor of Hebrew and Greek scholarship that Reuchlin could convince his compatriots of the righteousness of his arguments for "modern" learning. Soon thereafter the alliance between humanism and the Reformation became intimate, and an important task of the learned men was the elucidation of the Bible. Under such circumstances it was consistent for Melanchthon and Sturm in the sixteenth century to launch their extensive plan for secondary education in knowledge, eloquence, and piety. The program of studies of the reorganized Latin grammar school or *Gymnasium* of that century has been preserved in Melanchthon's *Book of Visitation* which was published in 1528. This program of studies is simply an account of the various ways in which a variety of Latin works were studied, for Latin was the sole subject of study.[2] The six-year curriculum of Würtemburg in 1559 which was copied by all Germany continued six years of Latin, three

[1] Ziegler, R. *Regiomontanus, ein geistiger Vorläufer des Copernicus.* Dresden, 1874.

[2] A translation of the *Book of Visitation* is contained in Barnard's *American Journal of Education*, IV, 749–751. Reprinted in part in Cubberley's *Readings in the History of Education*, 247–249.

of Greek, and five of music; religion, grammar, rhetoric, logic, and conversational Latin were taught concurrently with literary readings.[1]

The spirit of Vittorino breathed not in these German educational sanctuaries. Perhaps the school plants and teachers of Germany were not equal to the task of offering a thoroughly modern program such as Vittorino offered. At least one German prince, Duke Ernest of Saxe-Coburg-Gotha, did, in the seventeenth century, however, establish a system of schools which, in its science offerings, rivaled the great school of Mantua. The digest of his *Schulemethode* in Chart IV shows the breadth of the offerings of this remarkable system of schools.

CHART IV

THE CURRICULUM OF DUKE ERNEST'S SCHOOLS, 1642–1685[2]

Lowest Class

Bible verses	**Prayers**
Lord's Prayer	**Spelling**
Articles of Faith	**Reading**

Intermediate Class

Luther's catechism	**Penmanship**
Psalms and hymns	**Arithmetic**
Prayers	**Singing**

Upper Class

Religion	**Spelling** (based on the Bible)
Reading	**Science**
Writing	**Church Doctrine** as it relates to ritualistic ceremonials
Arithmetic	**Warning** against hard drinking
Civics	
Music	
Composition	

[1] See Cubberley, *op. cit.*, pp. 249–251, for a digest of a description of these schools which was originally in Barnard's *American Journal of Education*, VI, 426–434.

[2] Adopted from Barnard's *American Journal of Education*, XX, 576–584.

The science course, which follows closely *The Great Didactic* of Comenius, included the following activities: the teacher explained the hourglass, sundial, points of compass, signs of zodiac, the rising and the setting of the sun and moon, shooting stars, thunder and lightning. Observation lessons were conducted upon weather conditions and flora and fauna, including the anatomy of a pig when butchered. Mathematical sciences included surveying, weights and measures, carpenter's rule, the plummet, angles and circles, the balance, levers, and pulleys. The course in civics included community problems and personal conduct: problems of cities, towns, ditches, streams, courts, laws, trades, merchants, and schools; and individual conduct problems of domestic relationships, morality, prayers, manners, courtesies, cleanliness, bad language, stealing, lies, charity, relationships to rulers and to God, and obedience to parents.[1]

These descriptions of German schools show how strong the religious emphasis was in their programs, and they show also modern tendencies in science. These descriptions suggest besides that for certain classes of German boys a different form of training must have been required. One can hardly suppose that the spiritual descendants of chivalric heroes would find such programs satisfactory. Indeed, there were organized for the members of the gentry the *Ritterakademien* which were of great service in the modernization of the course of studies and counteracting the tendency of the classical schools to stereotype all education. As similar schools for the gentry were established in many parts of Europe, this type of institution will be left for separate treatment until later.

Humanism as heralded in England by Erasmus was also far different from the humanism of Italy. Erasmus, at

[1] Barnard's *American Journal of Education*, XX, 576–584.

forty years of age and already a scholar in Latin and Greek, had spent five years (1495–1500) in England. When in 1510 he reached England as a Cambridge professor of Greek and divinity, he was a ripened scholar and, though a thorough humanist and a Christian who held self-culture valuable though subservient to religious development, he was withal practical enough to see the sterile pedantry into which many Italian humanists had fallen. It was to be expected, therefore, that he would direct curriculum development toward a thorough understanding of, rather than an imitation of, the classical works which were studied.

In order to understand the position of Erasmus in this matter, it is necessary to canvass briefly the decadence of humanism during the half-century after Vittorino's death. This period was marked by an overemphasis upon the form rather than the content of literary works. Cicero came to be regarded as the master of Latin style, and decadent humanists, or Ciceronians, attempted to cultivate a style exactly like his. This imitation of Cicero called forth from Erasmus his satire entitled *Ciceronianus, or a Dialogue on the best Style of Speaking.*[1] This critical work will be discussed in Chapter VI. His work for secondary education included the writing of school books such as his own *Colloquies* or exercises in conversational Latin. These sketches were laden with proverbs and maxims which gave a moral tone to the dialogues. He edited Latin, Greek, and Hebrew works, and wrote besides many treatises which dealt with educational and religious topics.

Contemporary with Erasmus was Vives, whose views on education were, in regard to the importance of mathematics and experimental science, in advance of the views of Eras-

[1] Translated by Izora Scott. Teachers College, Columbia University, *Contributions to Education*, No. 21, 1908.

mus.[1] Another humanist of that period was John Colet, who, early in the sixteenth century, organized in London a Latin grammar school known as St. Paul's. This humanistic school was open to boys who were already far enough advanced in Latin and English to be able to read and write their own lessons. The following quotation from his Statutes sets forth the course of study of St. Paul's school.

The Course of Study of St. Paul's School

As touchyng in this scole what shalby taught of the maisters and lernyd of the scolers, it passith my wit to devyse and determyn in particuler but in generall to speke and sum what to saye my mynde, I wolde they were taught all way in good litterature both laten and greke, and goode auctours suych as haue the veray Romayne eliquence joyned withe wisdome specially Cristyn auctours that wrote theyre wysdome with clene and chast laten other in verse or in prose, for my entent is by thys scole specially to incresse knowledge and worshipping of god and oure lorde Crist Jesu and good Cristen lyffe and maners in the Children.

And for that entent I will the Chyldren lerne ffirst aboue all the Cathechyzon in Englysh and after the accidence that I made or sum other yf eny be better to the purpose to induce chyldren more spedely to laten spech And thanne Institutum Christiani homines which that leryned Erasmus made at my request and the boke called Copia of the same Erasmus And thenne other auctours Christian as lactancius prudentius and proba and sedulius and Juuencus and Baptista Mantuanus and suche other as shalby tought convenyent and most to purpose vnto the true laten spech all barbary all corrupcion all laten adulterate which ignorant blynde folis brought into this worlde and with the same hath distayned and poysenyed the olde laten spech and the varay Romayne tong which in the tyme of Tully and Salust and Virgill and Terence was vsid, whiche also seint Jerome and seint ambrose and seint Austin and many hooly doctors lernyed in theyr tymes. I say that ffylthynesse and all such abusyon which the later blynde

[1] See especially his *De Tradendis Disciplinis*. Translated by Foster Watson. Cambridge University Press, 1913.

worlde brought in which more ratheyr may be callid blotterature thenne litterature. I vtterly abbanysh and Exclude oute of this scole and charge the Maisters that they teche all way that is the best and instruct the chyldren in greke and Redyng vnto them suych auctours that hathe with wisdome joyned the pure chaste eloquence.[1]

The importance of this document is due largely to the fact that the program of this school became a model for many other institutions. The purpose of education in the American colonies over one hundred years later was also in harmony with Colet's course of study. The slight changes in the programs of classical schools for the two centuries following Colet and the contemporary liberal training will be sketched in the remainder of the present chapter.

Early modern secondary schools in England. Following upon the establishment of a modern course of study in St. Paul's, other schools reorganized their courses in accordance with the advanced notions of the day. Among the most famous of these schools was the Latin grammar school of Canterbury, which in 1541 was reorganized under the direction of Henry VIII. The text of the incorporations, statutes, and injunctions of this school has been preserved and, with Leach's translation of the document, appears in his *Educational Charters and Documents*.[2] This modern curriculum of Canterbury consisted of the study and reading of Latin fables, maxims, adages, comedies, poems, orations, essays, and epistles, Latin grammar and composition, conversational Latin, religion, rudiments of English, and incidental physical education and other recreation. The closing injunction suggests that Greek was a possible optional subject, al-

[1] Lupton, J. H., *Life of John Colet, D.D.* G. Bell and Sons, 1887.
[2] Cambridge University Press, 1911. Pp. 452–469.

though no courses in that language were mentioned in the curriculum itself. The Eton time-table of 1530[1] mentions no subjects of study save those in Latin and religion — if the study of the "properest hymns" indicates the study of religion.

Modern tendencies are more in evidence in the Westminster time-table of 1560. This time-table shows a marked advance over those of Eton and Canterbury during the reign of Henry VIII or the preceding generation. The document, which was originally in Latin, shows the complete offering of one of the most notable English schools of the sixteenth century and shows that the following subjects in one form or another were taught: Latin, Greek, Hebrew, English, religion, music, dramatics, public speaking, morality, and hygiene. As in all three of these early English secondary schools, Latin here included a considerable variety of content.

As compared with the best of mediæval schools, the Westminster school is found wanting in provision for a portion of the seven liberal arts; also as compared with Vittorino's school, many omissions are to be noted. The teaching seems, however, to be a gain over that of the Middle Ages, as Latin literature is here pursued as a subject desirable in itself and not expressly subservient to the needs of the church. If one can assume that boys of Westminster actually studied the literature of the Romans and the Greeks and not merely the Greek and Latin languages, the changed attitude toward the classics represents an enormous gain.

It should not be understood, however, that this type of school of early Elizabethan England provided for all the educational needs of youth in the sense that the "encyclo-

[1] Quoted in Leach, *op. cit.*, p. 451.

pedic" seven liberal arts of the Middle Ages attempted to do so. With the development of the universities in the twelfth century, there had come a differentiation of function of secondary schools and higher institutions, so that the attention of secondary schools was devoted mainly to the trivium. Indeed, secondary schools were often called trivial schools because they offered nothing more than grammar, rhetoric, and logic.

Early American Latin grammar schools. Up to this point of the discussion of modern schools in England, reference has been made only to the Latin grammar schools, which were, in the first half of the seventeenth century, carried to America. After showing briefly the close relation between English and American Latin grammar schools, a return to England will be made in order to discuss certain more liberal forms of education which flourished there prior to 1750.

American students need only to have the general characteristics of the early colonists suggested to them in order to understand that but one course of study was offered. Those colonists of New England from whom we have most direct educational ancestry had been trained in the schools and the customs of England. They had been nurtured by an educational system which offered thorough training in such content as that described above. They had also been nurtured by England at a time when men were not averse to living, fighting, or even suffering a torturing martyrdom for the sake of theological beliefs and ecclesiastical practices. Nothing could be more certain than that such scholarly churchmen would establish schools which were like those of England and that religion would be a dominant motive in both the establishment and conduct of the schools. A few quotations from contemporary writings will serve to verify this foregone conclusion.

First among the important source materials is the Massachusetts Law of 1647, which in modernized spelling reads as follows:

It being one chief project of that old deluder, Satan, to keep men from the knowledge of the scriptures, as in former times by keeping them in an unknown tongue, so in these latter times by persuading from the use of tongues, that so at least the true sense and meaning of the original might be clouded by false glosses of saint-seeming deceivers, that learning may not be buried in the grave of our fathers in church and commonwealth, the Lord assisting our endeavors; it is therefore ordered that every township in this jurisdiction, after the Lord hath increased them to the number of fifty householders, shall then forthwith appoint one within their town to teach all such children as shall resort to him to write and read, whose wages shall be paid either by the parents or masters of such children, or by the inhabitants in general, by way of supply, as the major part of those that order the prudentials of the town shall appoint; provided, those that send their children be not oppressed by paying much more than they can have them taught for in other towns; and it is further ordered, that where any town shall increase to the number of 100 families or householders they shall set up a grammar school, the master thereof being able to instruct youth so far as they may be fitted for the university, provided that if any town neglect the performance hereof above one year, that every such town shall pay five pounds to the next school till they shall perform this order.[1]

This document shows the purposes of the colonial Latin grammar schools and in turn indicates an inevitable course of study: an interest in religion provides the motive for the legislation, and the schools are intended to prepare boys for college. In order to verify one's almost certain guess as to these requirements, one may next examine the college entrance requirements of the leading colonial colleges.

The first laws drawn up for an American college were those for Harvard College in 1642. The subjects then pre-

[1] *Records of Massachusetts.* Vol. II, p. 203.

scribed for college students as well as those prescribed for entrance show the absence of modern secondary school subjects in the colonial curriculum. For entrance, the requirements consisted of the ability to read Cicero or the equivalent extempore, the ability to compose and speak Latin in verse and prose, and the ability to repeat correctly the paradigms of nouns and verbs in Greek. Additional rules pertain to the student's religious education and general conduct. The college curriculum of that time is shown by the following tentative time-table:

THE TIMES AND ORDER OF THEIR STUDIES, UNLESS EXPERIENCE SHALL SHOW CAUSE TO ALTER

The second and third day of the weeke, read Lectures, as followeth.

To the first yeare at 8th. of the clock in the morning *Logick*, the first three quarters, *Physicks* the last quarter.

To the second yeare at the 9th. houre, *Ethicks* and *Politicks*, at convenient distances of time.

To the third yeare at the 10th. *Arithmetic* and *Geometry*, the three first quarters, *Astronomy* the last.

Afternoone

The first yeare disputes at the second houre.
The 2d. yeare at the 3d. houre.
The 3d. yeare at the 4th. every one in his Art.

The 4th. day reads Greeke

To the first yeare the *Etymologie* and *Syntax* at the eighth houre.
To the 2d. at the 9th. houre, *Prosodia* and *Dialects*.

Afternoone

The first yeare at 2d. houre practice the precepts of *Grammar* in such Authors as have variety of words.

The 2d. yeare at 3d. houre practice in *Poësy, Nonnus, Duport,* or the like.

The 3d. yeare perfect their *Theory* before noone, and exercise *Style, Composition, Imitation, Epitome,* both in Prose and Verse, afternoone.

The fift day reads Hebrew, and the Easterne Tongues

Grammar to the first yeare houre the 8th.
To the 2d. *Chaldee* at the 9th. houre.
To the 3d. *Syriack* at the 10th. houre.

Afternoone

The first yeare practice in the Bible at the 2d. houre.
The 2d. in *Ezra* and *Danel* at the 3d. houre.
The 3d. at the 4th. houre in *Trestius* New Testamente.

The 6th. day reads Rhetorick to all at the 8th. houre.

Declamations at the 9th. So ordered that every Scholler may declaime once a moneth. The rest of the day *vacat Rhetoricis studiis.*

The 7th. day reads Divinity Cathecheticall at the 8th. houre
Common places at the 9th. houre

Afternoone

The first houre reads history in the Winter
The nature of plants in the Summer.
The summe of every Lecture shall be examined before the new Lecture be read.

Requirements for Degrees

Every Schollar that on proofe is found able to read the Originalls of the *Old* and *New Testament* into the Latine tongue, and to resolve them *Logically;* withall being of godly life and conversation; And at any publick Act hath the Approbation of the Overseers and Master of the Colledge, is fit to be dignified with his first Degree.

Every Schollar that giveth up in writing a *System,* or *Synopsis,* or summe of *Logick,* Naturall and Morall *Phylosophy, Arithmetick,*

Geometry and *Astronomy:* and is ready to defend his *Theses* or positions withall skilled in the Originalls as above said: and of godly life & conversation: and so approved by the Overseers and Master of the Colledge at any publique *Act,* is fit to be dignified with his 2d. Degree.[1]

Almost one hundred years later, in 1734, the new laws drawn up for Harvard still showed no change from the English models. The entrance requirements then consisted of the following:

Whoever upon examination by the President, and two at least of the Tutors, shall be found able *extempore* to read, construe, and parse Tully, Virgil, or such like common classical Latin authors, and to write true Latin in prose, and to be skilled in making Latin verse, or at least in the rules of Prosodice, and to read, construe and parse ordinary Greek, as in the New Testament, Isocrates, or such like, and decline the paradigms of Greek nouns and verbs, having withal good testimony of his past blameless behavior, shall be looked upon as qualified for admission into Harvard College.[2]

In addition to the requirements as stated for Harvard, Yale required by 1745 "Common Arithmetic."[3] Other colleges of this period made similar requirements.[4]

The education of a gentleman in early modern times. The early modern gentleman had educational needs which were believed to be very different from those of the clergy. It was for the edification of this person that much thought was expended and many books were written by educationists and other publicists during the sixteenth and seventeenth centuries as shown by the works catalogued in Chart V. The

[1] *Massachusetts Historical Collections,* I, pp. 244–246, 1792. Reprinted from *New England's First Fruits,* 1643.

[2] Pierce, Benjamin. *History of Harvard University* (from 1636 to 1769). Cambridge, 1833. Appendix, p. 125.

[3] Broome, E. C. *A Historical and Critical Discussion of College Admission Requirements.* Columbia University, 1903. P. 30.

[4] Brown, E. E. *The Making of Our Middle Schools.* Longmans, Green and Company, 1905. Chapter VII.

"compleat gentelman" and his training thus provide an important topic for discussion in connection with secondary school curricula.

CHART V

IMPORTANT EARLY TREATISES ON EDUCATION

Sixteenth Century

Erasmus, *Upon the Right Method of Instruction,* 1511
Castiglione, *The Courtier, c.* 1528
Lupset, *Exhortation to Young Men,* 1529
Elyot, *The Governour,* 1531
Vives, *The Transmission of Knowledge,* 1531
Rabelais, *Essays,* 1533 and 1535
Humfrey, *The Nobles,* 1561
Ascham, *The Scholemaster,* 1571
Sir Humphrey Gilbert, *Queen Elizabeth's Academy* (a proposal), *c.* 1572
Montaigne, *Essays,* 1580
Mulcaster, *Positions,* 1581

Seventeenth Century

Cleland, *The Institution of a Young Nobleman,* 1607
Brinsley, *Ludus Literarius,* 1612
Comenius, *The Great Didactic,* 1632
Peacham, *Compleat Gentleman,* 1634
Milton, *Tractate on Education,* 1644
Lord Herbert of Cherbury, *Autobiography*
Dury, *The Reformed School,* 1650
Hoole, *A New Discovery of the Old Art of Teaching School,* 1660
Gailhard, *The Compleat Gentleman,* 1678
Locke, *Some Thoughts on Education,* 1693

A special form of education for the gentry was not a new adventure. Besides being incorporated into the educational ideals of the Greeks and the Romans, specialized training for a boy of noble birth had existed for centuries before modern times as chivalric education. As early as the tenth century, certain refinements in the conduct of knights received attention in the upbringing of boys who were destined

for knighthood. The refinements or social customs of the times are known as chivalry. The ideals of chivalric education — religion, honor, and gallantry — necessitated a form of training which could not be obtained in a monastery. To meet this need there was developed the so-called educational system of chivalry which is described or at least reflected in the works of the early troubadours and minnesingers.[1] This system consisted of three divisions: that of the page for boys under fourteen; that of the squire for youths of fourteen to twenty-one; and that of the knight. The training of the page was administered in the court of the king or of a knight. A great variety of services, many of them menial in character, were exacted of the page for the purpose of training him in service, obedience, politeness, and courtesy. The boy's religious education was also begun during this period. The training of the young squire was in part a continuance of his duties as the valet of a noble, together with practice in such knightly activities as riding, hunting, and fighting, and also such refining pursuits as composing songs, singing, dancing, playing the harp, and participating in religious observances. The training of the knight consisted principally of his passing through an elaborate initiation ceremony. In preparation for the final dubbing as a knight, the young man purified himself by fasting, prayer, and suitable meditation. Finally, he vowed to devote his life to an attack upon evil and a defense for all things pure and righteous — including women. So little of the seven liberal arts was included in chivalric education and so different were the ideals of the schoolmen and the knights that a dual form of education was necessary throughout the later Middle Ages.

[1] Cf. the *Parsifal* as related by Wolfram von Eschenbach. (Taylor, *The Mediæval Mind*, Vol. II.)

A direct outgrowth of chivalric education is to be found in the tendencies of the early modern period. Like the gentry of the Middle Ages, the high-born lads of early modern times seldom found suitable training in the formal schools of their day. Exceptions to this condition are found, however, in Vittorino's cosmopolitan school, but, as shown above, such an elaborate program of studies was not to be found in the northern humanistic schools of France, Germany, or England. Even in Italy Vittorino's cosmopolitan program declined under the direction of the Ciceronians to the mere husks of learning. While certain members of society seem for the last ten centuries to have been satisfied by such formal literary training, many other persons representing the gentry have demanded and usually found a form of training which, if not in itself always active and practical, led directly to a worldly life far removed from the pedantic tasks imposed by the proverbial schoolteacher. In feudal days a nonscholastic demand led to chivalric education. In early modern times a somewhat similar demand led to types of training which are almost entirely overlooked by the historian who examines only the Latin grammar schools and the universities.

The fresh breath of realism which added charm and vigor to the thorny course marked out by later humanists came like humanism itself from Italy. There in 1528 Castiglione in his book, *The Courtier*, gave voice to the desires of the able nonscholastic boy. This book, by describing the education of a man of the world — statesman, soldier, artist, noble, or sailor — had much to say not only of language and literature but also of skill in arms, sports — hunting, swimming, tennis, and so on — dancing, music, drawing, painting, and sculpture. All these pursuits were advocated along with grace, politeness, and modest superiority in all things.

While Castiglione was broadening the scope of education to meet the needs of pupils to whom the English grammar school must have been most odious, Erasmus and Vives were trying to popularize sound scholarship in England by showing the reality of the humanities when correctly studied. A correct view of progressive educators of the England of 1530 includes, therefore, first the works of scholars who plead for a broad general and liberalizing training in the traditional arts and the classics and, second, the works of practical writers on education who plead for all the training that letters could bestow and, in addition, training in all that gives urbanity to the courtly citizen. As the Latin grammar schools gave at best only literary and religious training, some other institution was required to train boys for courtly life.

England saw this need and set herself the task of meeting it successfully. From the date of Thomas Elyot's *The Boke Named the Governour,* 1531, publicists and teachers wrote upon and practiced the art of liberal education. Elyot recounts the virtues of humanistic training and then adds geography for its own sake and for its value to historical study, history for its own interest and for its value in counseling the future statesman, games and sports for pleasure and to adapt the "body to hardiness, strength, and agility." Thus, through his curriculum which runs from dancing to philosophy, Elyot shows how to produce "men of so excellent wisdom that throughout all the world should be found in no common weal more noble counsellors." Sir Humphrey Gilbert in *Queen Elizabeth's Academy* proposed early in the reign of that queen a curriculum of language and literature, science and mathematics (pure and applied), modern languages, English writings, music, law, heraldry, dancing, fencing, and such additional knowl-

edge of law and grace of manner as could be acquired only in the Inns of Court. Almost simultaneously with Sir Humphrey's proposal appeared Roger Ascham's *The Scholemaster* (1570). This book was designed to set forth a "plain and perfect way of teaching children, to understand, write, and speak, the Latin tongue, but specially purposed for the private bringing up of youth in gentlemen's and noblemen's houses."[1] In 1581, Richard Mulcaster, the practical headmaster of Merchant Taylor's School, published his *Positions*. In this treatise the author discussed both course of study and the method by which boys and girls might be trained "either for skill in their booke, or health in their bodie."[2] This enterprising master analyzed his broad program in a very modern manner. Particularly significant are his extended discussions of physical education and of a fairly modern course of study for girls. With the general point of view of these pleaders for a realistic education alongside the humanities, two important contemporary essayists, Rabelais and Montaigne, were also in accordance.

In the succeeding centuries other writers plead for an education not to be found in such grammar schools as Eton or Westminster. Among these writers were Lord Herbert of Cherbury, Peacham, Milton, and Locke of the seventeenth century. Lord Herbert in his autobiography tells how he obtained an education at Oxford in spite of the university, and then outlines for parents somewhat such a course as he pursued independently. He opens his course with a considerable disquisition upon the fact that religious and moral qualities are personal matters to be worked out between God and man. He then names certain subjects which the

[1] Title page of *The Scholemaster*. The spelling is here modernized.
[2] See edition of the *Positions*, by R. H. Quick. Published by Longmans, Green and Company, 1888.

young gentleman should pursue, together with reasons for pursuing them. "It would be fit," says he, in his autobiography, "that some time be spent in learning rhetoric or oratory, to the intent that upon all occasions you may express yourself with eloquence and grace." Of physical education, he continues, the

> exercises I chiefly used, and most recommend to posterity, were riding the great horse and fencing. . . . As for dancing, I could never find leisure enough to learn it, as employing my mind always in acquiring of some art or science more useful; howbeit, I shall wish these three exercises learned in this order. That dancing may be learnt first, as that which doth fashion the body, gives one a good presence in and address to all companies, since it disposeth the limits to a kind of *souplesse* (as the Frenchmen call it) and agility, in so much as they seem to have the use of their legs, arms, and bodies more than any others, who, standing stiff and stark in their postures, seem as if they were taken in their joints or had not the perfect use of their members. I speak not this as if I would have a youth never stand still in company, but only, that when he hath occasion to stir, his motions may be comely and graceful, that he may learn to know how to come in and go out of a room where company is, how to make courtesies handsomely, according to the several degrees of persons he shall encounter, how to put off and hold his hat; all which, and many other things which become men, are taught by the more accurate dancing-masters in France.

Next are mentioned fencing and riding which he himself had time to learn, and later swimming which, owing to a water complex, he did not learn. He then catalogues questionable amusements such as "running horses," hawking, and bowling, and open vices such as "dicing and carding, especially if you play for any great sum of money, or spend any time in them." To the list of desirable subjects Cherbury adds a description which indicates community civics: "It would also deserve a particular lecture or *recherché,* how one ought

to behave himself with children, servants, and neighbors; and I am confident, that precepts in this point will be found more useful to young gentlemen, than all the subtleties of schools." Incidental comments such as these on education from a scholar who before he was twelve years old was able to compose verses in Greek and Latin, and who continued his education according to established forms supplemented by his own devices, indicate how far short of the needs of the times the grammar school came.

In 1634 Peacham's *Compleat Gentleman* included an important point in the education of the young man of blood. This topic, travel, had, however, been discussed by other educationists. Although there were believed to be few persons worse than the proverbial Italianated Englishman, Peacham agreed with Locke that well-planned travel was essential for the gentleman, for, he says, "In my opinion nothing rectifieth and confirmeth more the judgment of a Gentleman in foreign affairs, teacheth him knowledge of himself, and setleth his affection more sure to his own Country than travel doth."[1] Peacham devotes a separate chapter of his book to each of the following subjects: literary style and history, cosmography, geography, geometry, poetry, music, drawing and painting, heraldry, physical education, travel, and fishing.

The comments of John Milton in his *Tractate* (1644) on education should be studied as coming not from a great poet but from one of the most scholarly men of his day. He was one of the scholars who accepted promising lads for teaching and was, therefore, fortified in his beliefs. A complete and generous education was according to Milton one which included training in arithmetic, geometry, Latin, Greek, astronomy, trigonometry, engineering, fortification,

[1] G. S. Gordon's edition. Clarendon Press, 1906. P. 235.

navigation, physics, natural history, anatomy, and the elements of medicine. To make this realistic course the more encyclopedic, Milton included in his recommendations in Latin and Greek many writers who were unknown to the schools. — "These," proclaimed this schoolmaster, "be the studies in which our noble and our gentle youth aught to bestow their time in a disciplinary way from twelve to one and twenty unless they rely more on their ancestors dead than on themselves living." Little less exacting was Locke, who, in *Some Thoughts Concerning Education* (1693), wrote that "Latin and French as the world now goes, is by every one acknowledged to be necessary"; but he had besides these subjects a generous list: arithmetic, geometry, geology, biology, geography, astronomy, anatomy, chronology, ethics, civil and common law, physical education, and practical arts. This curriculum, when supplemented by travel, Locke believed to constitute a well-ordered program of studies.

Finally in the discussion of the education of nobles, Defoe's *The Compleat Gentleman* (1728–1729) must be noticed.[1] Defoe, more daring than the rest, not only advocated a modern course, but even questioned whether Latin and Greek should be studied at all:

> We find the Moderns begin to gain upon the Antients extremely, and some parts of knowledge shine brighter in English than they ever did in Latin. Our phylosophers have exploded the Ancients in many things such as in the mocion of the heavenly bodyes, the use of the magnet, and improvements of navigacion, which, are all modern, and several other things; likewise the circulacion of the blood in physickal experiments . . . likewise the improvments in the mathematicks, fortificacion, incampments, intrenchings, millitary discipline, beseiging and defending towns. . . . Now all these studyes are made in the English tongue, and are necessarily

[1] Edited with an excellent introduction by K. D. Bülbring. Published by David Nutt, London, 1890. Written about 1728.

to be received there, and in no other. Greek and Latin have nothing to do with it.[1]

While the education of a gentleman was progressing in England, the progressive educators of other countries were not idle. In France, both the short-lived Port-Royalists of the middle of the seventeenth century and the Oratorians, who appeared earlier and persisted long after the Port-Royalists, used French as the basic language in their teaching. They also offered their pupils a broad curriculum which included mathematics (algebra, geometry, trigonometry, analytic geometry, and the calculus), science, history (sacred and secular), and geography.[2]

By 1650, France had as many as twelve important academies in which courses were offered especially for youth of noble birth. The curricula of the academies included natural science, mathematics, geology, French history, heraldry, modern language, riding, and other gentlemanly arts.[3]

This knightly training of France was pursued by German boys; some of them went to France for their training, while others attended the *Ritterakademien* which reflected much of the character of French academies. The purposes and properties of these schools are aptly sketched in Russell's account of them:

> Dissatisfaction with education at home and admiration for everything foreign soon worked a complete change in the ideals of the German nobility. The highest ambition of the young noble was to become a "perfect cavalier." To know the latest Parisian fads, fashions, and customs; to know how to dance, fence, and ride like a born Frenchman; to be accomplished in speech and manner — all this was of more importance than a knowledge of

[1] *Ibid.*, pp. 230–231.
[2] Perraud, Adolphe. *L'Oratoire de France an XVIIe et an XIXe siècle.* Paris, 1865. Pp. 220ff.
[3] Cf. John Evelyn's account of these schools in his *Diary.*

Latin or the art of disputation. French political ideas readily found a place in many German states, and the "perfect cavalier" gradually came to need special preparation for civil and military service. The new ideal carried with it the desire for an acquaintance with mathematics and physics and their practical applications. The new political sciences, political history, jurisprudence, geography, and statistics, heraldry and genealogy, were all a part of the educational life of the *galant homme*. To be sure, the formal disciplines (religion, ethics, rhetoric and dialectics) were not altogether abandoned; nor was Latin wholly supplanted by French and the other modern languages. But the fact is these old-fashioned studies were relegated to places in the rear rank; all that pertained to fine manners, practical conduct, and civil military functions, came to the front.[1]

Although the Thirty Years' War (1618–1648) played havoc with these schools, they were revived in the latter half of the seventeenth century under the leadership of the pietist, Francke.[2] Meanwhile, the Gymnasien existed, but hardly flourished. Germany was thus furnished with two systems of secondary education, neither of which could attract the diligent scholar or guide the strongest minds.

Early differentiation of the modern subjects. A part of the task of early modern times consisted of the differentiation of the modern subjects. That these subjects were taught at least occasionally during these centuries has been shown by the programs of Vittorino, Mulcaster, and others. As stated above, the early grammar schools devoted their energies chiefly to the subjects of the trivium. In doing so they maintained a very conservative course of study. Other schools, however, devoted much of their energies to the subjects of the quadrivium. These schools, especially private

[1] Russell, J. E. *German Higher Schools.* Longmans, Green and Company, 1898. Pp. 51–52.

[2] For an illuminating sketch of Francke's work, see Monroe, *Cyclopedia of Education.*

schools for the nobles, became by contrast schools of progress with courses in the vernaculars, science, and mathematics.

No subject seems to have caused greater travail in its birth and later development than English. Prejudices and fears such as those expressed by Petrarch in regard to his own vernacular had to be overcome, traditions of the classroom had to be broken, the ideal of a universal scholars' language had to be shattered, textbooks in English had to be prepared. Many stages separate the birth of English as a vernacular and as a literary language from its acceptance as a subject to be studied in higher schools. Most remote is the stage at which the Latin grammar schools first arrived and lingered. During that period, if the rules were enforced, English was seldom tolerated even in the play of older boys. A second stage may be located during the early sixteenth century when Vives, in 1531, in agreement with Comenius, says of language in the school: "Let them (the pupils) at first speak in their own tongue, which was born in them in their home, and if they make mistakes in it, let the master correct them. From this start gradually proceed to speaking in Latin. They will mix up in the vernacular what they have heard from their master or read themselves in Latin, so that at first the language in the school will be a mixture of the mother tongue and of Latin. Let them speak their own language out of doors, so that they may not accustom themselves in any way to make a hotch-potch of two languages. The instructor must take all possible care that the expressions used are pure, and good Latin." [1] With such upbringing, it is little wonder if the schoolmasters themselves could not, as the contemporary Palsgrave alleged, express their

[1] *The Transmission of Knowledge.* Watson's translation, p. 110. Cambridge University Press, 1913. Contained in a volume entitled *Vives: On Education.*

thoughts in their own vernacular.[1] For the next fifty years during which English remained in this state of subordination, books intended for scholars were written first in Latin for permanence and then, if desirable, translated. An interesting instance of a change in this matter is provided by Roger Ascham. When in 1545 he produced in English his book on archery, he excused himself for this vulgarity by saying that he believed many men who would wish to read such a book were not Latinists. Twenty-five years later Ascham's *Scholemaster* appeared in English with no apology for the vernacular.[2] During this time, in 1553, there appeared the first important textbook on English composition. Many men of this time seem to have been on the borderline in the acceptance of English; if they could use a sufficient number of Latin phrases in their English, they seem to have thought themselves still within the pale of respectability. Sir Humphrey Gilbert in his proposal entitled *Queen Elizabeth's Academy* (*c.* 1572), had advocated rhetorical exercises in English because of the necessity of using English "as in preaching, in council, in parliament, in commission, and other offices of Commonweal."[3]

By 1580 a third stage was reached in the acceptance of English. Between that date and 1600 Mulcaster went to the extreme of showing in his *Elementaire* how to teach English, and Carew, in a scholarly epistle, argued the case for English literature by cataloguing the broad range of excellent writings in English. This period was yet one of apology. Mulcaster in the *Positions* defended the use

[1] Watson, Foster. *Vives: On Education*, p. cxliii. Under the leadership of Peter Ramus, a similar adoption of the vernacular in France was taking place. Central Europe, like England, was influenced in this matter by Comenius.

[2] A parallel development took place in contemporary France. Cf. Peter Ramus, *Avertissements sur la réformation de l'Université de Paris au Roy*, 1562.

[3] See W. H. Woodward's *Studies in Education during the Age of the Renaissance*. Cambridge Press, 1906. Gilbert's proposal is reviewed on pp. 302–306.

of English much as Ascham had defended it thirty years earlier; it is important to note, however, that Ascham addressed the gentry, while Mulcaster addressed schoolmen.

Within the next half century, Englishmen became so fully reconciled to their vernacular that Peacham could boldly assert his belief in training in English as essential in the education of a gentleman. This attitude may be cited as representative of a fifth stage. How difficult the convincing of schoolmen was can be determined by reflecting that this point of view was not adopted until after Shakespeare and Spenser and then only by the most advanced writers of the times. A boy might yet have attained academic honors and have been quite innocent of English literature.

Between 1640 and 1740 a sixth stage in this development was reached by enthusiasts who regarded English as a suitable foundation for all important learning. By this time the principle of Vives and Comenius that the mother tongue should be the language of the first school years had been accepted in practice, and such a writer as Defoe was ready to defend as an educated gentleman a man who based his claims to scholarship on works in English alone. Several additional stages in the development of English as a school subject have taken place since 1740, but these six stages bring the reader to the age of Franklin and his proposals that English be an important department in an academy to be established in Philadelphia.

During these successive stages, there was a transformation of the ancient subject of logic, so that, with the development of English as a secondary school subject, logic became a part of the new subject of oral and written English. That is, by the time of Elizabeth, 1558–1603, logic had been dislodged but not quite routed. Watson interprets the declamations held on Saturdays in the Westminster school, however, as a

survival of mediæval logic and disputation.[1] This dislodging of logic was due chiefly to two causes: first, to the expansion of grammar and rhetoric which followed the extensive use of the classics; and, second, to the development of an educational psychology which held that logic was ill-adapted to "unmathematical Novices." [2] It is significant that logic was one of the first subjects pursued at Oxford in 1593 by the twelve-year-old Lord Herbert of Cherbury,[3] and that he had already "attained to the knowledge of the Greek tongue and logic." This persistence of logic as well as its dislodgment was due also in part to adherence to a principle of educational psychology. The principle which led to the persistence of logic was one of the most venerable of all principles, namely, the theory of formal discipline. For example, Lawrence Humfrey, in 1561, in his treatise on the education of a gentleman says: "Rhetoric and Logic are necessary to file the talk, whet the wit and imprint order, wherewith Aristotle, the prince of pleading and reasoning, instructed his Alexander."[4] This view of logic, which was repeatedly set forth by prominent sixteenth-century writers on education, indicates that logic held a place similar to that which has more recently been occupied by mathematics. Still another psychological principle which was enunciated during the sixteenth- and seventeenth-century discussions of logic was that which advocates the postponement of highly abstract subjects until after a reasonably wide experience with concrete things has been attained. For example, Comenius wrote upon this matter in *The Great Didactic* (1632): "It has already been shown that the study of facts

[1] Watson, Foster. *The English Grammar Schools to 1660.* Cambridge Press, 1908. P. 94.
[2] Milton, John. *Tractate on Education.*
[3] *The Life of Edward Lord Herbert of Cherbury.* Written by himself.
[4] From Humfrey's *Nobles.* Here quoted from Watson, *op. cit.*, p. 86.

must precede that of their combinations; that matter logically precedes its form, that this is the only method by which sure and rapid progress can be made, and that we must therefore learn our facts by observation before we can pass a sound judgment on them, or enunciate them in well-turned phrases." [1] Survivals of logic in schools after this time, which indicate the success of the efforts of Ramus and others to make of logic a practical or applied subject, are to be found in contemporary writings.[2] Nevertheless, logic continued in some form as a secondary-school subject until the nineteenth century.[3]

Science moved slowly toward the schools of early modern times. At times, as with Vittorino, science was welcome. How small a place science had in humanistic English schools has been shown by their time-tables. Science had its advocates, however, in such writers as Vives and Comenius, who proposed object nature lessons as a simple and psychological approach to abstract subjects. Hoole in 1660 suggests, as one of the reasons why London was preëminent as a place for "the full improvement of children," the fact that once a year pupils can go to a well-stocked museum of rarities. Private schools, or schoolmasters like John Milton, advocated and offered science by means of the classical works on that subject. The sources of the subject matter of science even when it was taught indicate that one might have examined a progressive school of the times without suspecting that Bacon, Harvey, Pascal, Galileo, or Boyle had ever existed.

[1] P. 428 of Keatinge's edition. A. and C. Black, 1896.

[2] Cf. Hoole, Charles. *A New Discovery of the Old Art of Teaching School.* Written in 1637 and first printed in 1660; p. 281 of Mark's edition. Cherbury, *op. cit.*, also advocates such a subject, although his recommendations are given under the term rhetoric or oratory.

[3] For an account of the reconstruction of logic by Ramus, see F. P. Graves, *Peter Ramus.* The Macmillan Company, 1912.

The promise of scholarship in the early modern period. The sad state of scholars at the close of the early modern period doubtless led numerous men to live in ignorance of the best thought of their time. There were Latin grammar schools for pedants and academies for the gentry, but there were few if any schools for the lad who would follow Bacon in the advancement of learning. Indeed, many of the intellectual leaders of that day lived a life apart from formal institutions of learning and had received much of their training outside the walls of academic respectability. As Russell asserts, it is significant that the schools and universities of Europe "between 1625 and 1725 were not the workshops of the leaders of thought."[1]

Many of these leaders had nevertheless been trained in the schools and universities of their day. William Harvey (1578–1657), for example, attended the grammar school of Canterbury, where he studied Greek and Latin until he was about fifteen years of age. He then went to Cambridge, where he spent three or four years in the study of Greek, Latin, dialectics, and physics. Thereafter, he betook himself to Padua for a five-year medical course.[2] Upon his return to England, Harvey attached himself to the College of Physicians, where he studied and lectured for twenty-five years. While thus engaged as a lecturer and also in the practice of his profession, he made his discovery of the circulation of the blood.

Other notable leaders may be cited. Leibnitz (1646–1716), though a bitter opponent of the schools of his fatherland, was an ardent educationist. He attached himself to the courts rather than to schools. He outlined curricula and wrote treatises on education, always looking toward the

[1] *Op. cit.*, p. 55.
[2] Willis, Robert. *The Works of William Harvey, M.D.* London, 1847. Pp. xix–xx.

liberal courses of the French academies and the *Ritterakademien*. Francis Bacon (1561–1626), the courtier and publicist, who was one of the most influential educationists of his times, seems to have severed his direct connection with schools at the age of fifteen when he left Cambridge. Numerous other biographical sketches of leaders, as Descartes, Hobbes, Boyle, Locke, and Newton, could be given to indicate that the schools gave these men the formal training of that day, but that the advancement of learning came not by following the methods or subject matter of grammar schools or universities. Instead, the promise of scholarship seems throughout the latter decades of the early modern period to have been given by influences outside the decadent humanistic schools. The promise of scholarship came from such leaders as have been named — men who were for the most part outside the academic ranks when they produced their significant contributions if not during their periods of training, and from such modernized schools as those of the Oratorians, the Port-Royalists, and the Pietists. In brief, the faith of the scholarly fathers of the humanistic period was forgotten by their pedantic progeny. Further advance lay in a renewal of the faith which fortifies all leaders in education. Decadent faith lay smouldering in the grammar schools and universities; the faith of the fathers rose as a beacon in the new schools and in the work of leaders who were unshackled by the inertia of deadening academic formalities. The classics called for rescuers, mathematics needed the continued leadership of influential scholars who were all too rare, modern literature pleaded for a place beside ancient works, science sought freedom from verbal thralldom, while history had yet to be written. Promise there was in these years, but new or reconstructed schools, subject matter, and methods were requisite for the fulfillment of the

promise. The provision of these requisites, although begun in these early years, opens a new era in secondary education. The story of that new era is recorded in Chapter V.

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(See also references cited in parenthetical note at end of preceding chapter.)

CHAPTER V

MODERN SECONDARY-SCHOOL CURRICULAR THEORIES AND PRACTICES, 1730–1900

The great awakening in secondary education. Heralds proclaimed for generations before the eighteenth century a new program of studies in Europe and America. Vives, for example, in 1531 advocated a broad program of studies which included mathematics and science.[1] Likewise, Comenius in *The Great Didactic* (1632) and Milton in his *Tractate* (1644) far transcended the restrictions of contemporary Latin grammar schools. To these notable heralds can be added such forerunners as Sir Humphrey Gilbert, John Dury, Lord Herbert of Cherbury, and John Locke. Besides these men, there were still other scholars who devoted much of their lives to the increasing of scientific knowledge. Among such scientists, preëminent contributors were Kepler, Harvey, Descartes, Boyle, Newton, and others whose names were cited in the closing paragraphs of Chapter IV.

So well established were the traditions of English education that even these great masters of prose and of science could only slowly free the educators of their country from extreme conservatism. Contemporary religious conditions, however, hastened the day when schools should broaden their programs of studies and organize them in conformity

[1] *De Tradendis Disciplinis.* Watson's translation. He indicated (p. 22) that he had in mind experimental science and not science as found in the classics.

with existing bodies of useful subject matter and the changing needs of modern society. These religious conditions led in England to the Act of Uniformity which, as enacted in 1662, drove nearly two thousand nonconformist ministers from their parishes. Many of these ousted parsons were prepared for and interested in becoming schoolmasters, and, consequently, even in spite of unfavorable enactments, set up independent schools. As some of these parson-schoolmasters had caught the educational spirit of Vives, Milton, and Lord Cherbury, their schools offered as broad a range of subjects as had the Mantuan school of Vittorino. One of these schools, for example, the academy at Sheriff-hales, from 1663 to 1697, provided training in Latin, Greek, Hebrew, and English; mathematics, pure and applied; science, including natural science and practice in anatomy; and logic and ethics.[1]

Another seventeenth-century school was established by Charles Morton at Newington Green. This school, which was attended by the versatile Defoe and by Samuel Wesley, had, according to Defoe, the distinction of giving its boys an excellent mastery of the English language.[2] This academy was particularly important because of its apparent influence upon Defoe. Although Defoe states that pupils left this school "not Destitute in the Languages," it was here probably that Defoe was imbued with the notion of a possible modern education without benefit of the classics. The influence of this school seems also to be shown in Defoe's *Essay on Projects.* As this essay appears in turn to have influenced Benjamin Franklin, the founder of America's

[1] *The Quarterly Journal of Education,* I, p. 51, 1831. See also E. E. Brown, *The Making of our Middle Schools* (Longmans, Green and Company, 1902), p. 163, and Irene Parker, *Dissenting Academies in England* (Cambridge University Press, 1914), pp. 69–72.

[2] *Present State of Parties.* See also Parker, *op. cit.,* pp. 59–63.

first academy, its importance and the effect of the Newington school upon curriculum development in America will presently be obvious.

The program of studies of another influential English academy is important because from its influence came a famous pupil, Joseph Priestley, who was later a friend of Franklin. At this school, which was founded in 1729 by Philip Doddridge, a Miltonic program of studies was provided. Early in the course, the boys were taught shorthand so that they could more readily take lecture notes.

> The French language was also taught to those who desired to learn it. Systems of logic, rhetoric, geography, and metaphysics were read during the first year, references being made to other authors whom the students were expected to consult. Lectures on geometry and algebra were read, and instruction given in trigonometry, conic sections, and celestial mechanics. A system of natural philosophy was read, illustrated by experiments, for which the academy was furnished with simple apparatus. . . . History, natural and civil, a full system of Jewish antiquities, and the anatomy of the human frame were also among the branches which they pursued.[1]

Also the study of "polite literature was encouraged," and lectures were delivered on civil law, mythology, and English history. The effectiveness of such realistic programs in attracting pupils who did not plan to enter the ministry is shown in Table I.

The present section of this chapter is entitled "The Great Awakening in Secondary Education" because the curriculum innovations just described were indicative of conditions which soon afterward became general, and because these changes marked the beginning of an emancipation of schools

[1] Boyd, J. R. *Memoir of the Life, Character, and Writings of Philip Doddridge.* American Tract Society, 1860. P. 283. The time-table of this school is given in Parker, *op. cit.*, p. 86.

from linguistic formalists. Although many academic experiences of this period attest that these nonconformist schools were in advance of their times, somewhat as Vittorino's was in the fifteenth century, still the movement toward an enriched program of studies had greater force and extent than ever before. In the fifteenth century the broad curriculum of the Mantua school shrank on its journey to

TABLE I

VOCATIONAL CHOICES OF 93 BOYS WHO ATTENDED THE WEST OF ENGLAND ACADEMY, EXETER, ENGLAND, ABOUT 1760. (BASED ON RECORDS QUOTED BY PARKER, *op. cit.*, p. 122.)

VOCATIONS	NUMBER	PERCENTAGES
Merchants	24	25.8
Esquires	13	14.0
Physicians	7	7.5
Navy or navy office men	7	7.5
Attorneys	6	6.5
Ministers	4	4.3
Army men	3	3.2
Apothecaries	2	2.1
Unknown	27	29.1
Total	93	100.0

Germany, France, and England to a narrow and formal classico-religious program. In the eighteenth century, however, the enriched curricula of English academies lost little if any of their content on their journey to Scotland or America. As stated at the beginning of this chapter, the strength of the curricula of eighteenth-century academies was no sudden development; Comenius (1592–1671) and his successors on the continent had laid the basis of curricula in learning that was broad and deep. Alongside Comenius, the educator, were Kepler (1571–1630), the scientific discoverer, and Jungius (1587–1657), the founder of the first

natural science association of northern Europe. From this combination of humanism as represented by Comenius and science as represented by Kepler and Jungius came an influence which was promptly recognized by the gentry who had been trained in the Franco-German *Ritterakademien*. These progressive nobles became supporters of a liberal rationalism which was far removed from narrow classicism. Strangely enough, there was joined with the liberal spirit of the nationalists an influential group of German dissenters, known as Pietists. The Pietists, under the leadership of Francke (1663–1727), teacher and philanthropist, perceived the value of science, mathematics, and modern languages in a Latin school. And, as a result of Francke's efforts and his advocacy of schools which should fit the youth of the middle classes for practical life, "there has since grown up in Germany a class of *Real*-schools. Herein Francke acted in conformity with the rationalistic spirit of his times. Whatever may have been his opinion of the *Ritterakademie* as an institution for the practical training of the nobility, he certainly believed in the wisdom of a practical training for the learned professions, for the business occupations of the citizen class, and for the needs of the people generally. The *Real*-school, therefore, is the direct response to the educational ideal that lays special emphasis on the mastery of environment. It is the outgrowth of one phase of the rationalistic mode of thought." [1] Accordingly, within the next generation (1747), Hecker, another pietist, established in Berlin a *Realschule* which offered instruction "in religion and ethics, the German, French, and Latin languages, writing, arithmetic, drawing, history, geography, and the elements of geometry, mechanics, and architecture.

[1] Russell, J. E. *German Higher Schools.* Longmans, Green and Company, 1898. Pp. 64–65.

An important feature of the founder's plan was a series of optional courses designed to give pupils an insight into the practical workings of the various trades and occupations of burgher life." [1] Within a few years many similar schools were established, and from that time to the present day *Realschulen* have represented much of the spirit of the early English academies and of the Scottish and American academies which are yet to be described.

When in 1760 the town council of Perth, Scotland, decided that it would be of "great utility to the youth to have an academy for literature and science established at Perth," there was begun a series of foundations of liberal Scotch schools. As the contemporary burgh records of Perth continue, "Not long ago, all learning consisted in the grammatical knowledge of dead languages and in skill in metaphysical subtleties; now things begin to be estimated according to their value. The time necessary for completing a course of education at the universities and the expense of such attendance prove an insurmountable bar in the way of the greater part who have inclination for these studies." [2]

It was expected that the academy would offer a valuable nonclassical curriculum. This curriculum "consisted of the higher branches of arithmetic, mathematical, physical, and political geography, logic, and the principles of composition; algebra, including the theory of equations and the differential calculus; geometry, consisting of the first six books of Euclid; plane and spherical trigonometry; mensuration of surfaces and solids; navigation, fortification, analytical geometry, and conic sections; natural philosophy, consisting of statics, dynamics, hydrostatics, pneumatics, optics, and

[1] Russell, J. E. *German Higher School.* Longmans, Green and Company. 1898.

[2] Here quoted from James Grant, *History of the Burgh Schools of Scotland.* William Collins, Sons, and Company, 1876. P. 115.

astronomy; and subsequently chemistry was added." [1] Several other similar six- or eight-year programs are cited by Grant.[2] Some of the programs, like that of Perth, omitted Latin and Greek, while others included Latin, Greek, and French.

During the period of popularization of academies in Europe, a similar popularization took place in America. The first American academy was proposed by Franklin in 1743 and opened eight years later in Philadelphia. Although Franklin would gladly have made the curriculum of this school like that of Perth, he was persuaded to add both ancient and modern languages. When in 1749 Franklin redoubled his efforts he proposed a program of studies which in breadth and modernity stands in striking contrast with contemporary Latin grammar school and college curricula. The importance of the Franklin Academy in the curriculum development of American secondary education warrants the including of the founder's long account of his curriculum views:

That a House be provided for the ACADEMY, if not in the Town, not many miles from it; the Situation high and dry, and if it may be, not far from a River, having a Garden, Orchard, Meadow, and a Field or two.

That the House be furnished with a Library (if in the Country, if in the Town, the Town Libraries may serve) with Maps of all Countries, Globes, some mathematical Instruments, an Apparatus for Experiments in Natural Philosophy, and for Mechanics; Prints, of all Kinds, Prospects, Buildings, Machines, &c.

That the RECTOR be a Man of good Understanding, good Morals, diligent and patient, learn'd in the Languages and Sci-

[1] *Ibid.*, p. 118. Later records show, Grant adds on page 119, that "this academy has in a large degree carried out its original intention; . . . so that the claim of Perth to the honor of having been the first burgh in Scotland to introduce science classes into our public schools is well founded."

[2] *Ibid.*, pp. 114–128.

ences, and a correct pure Speaker and writer of the *English* Tongue; to have such Tutors under him as shall be necessary.

That the boarding Scholars diet together, plainly, temperately, and frugally.

That to keep them in Health, and to strengthen and render active their Bodies, they be frequently exercis'd in Running, Leaping, Wrestling, and Swimming, &c.

That they have peculiar Habits to distinguish them from other Youth, if the Academy be in or near the Town; for this, among other Reasons, that their Behavior may be better observed.

As to their Studies, it would be well if they could be taught *every Thing* that is useful, and *every Thing* that is ornamental: But Art is long and their Time is short. It is therefore proposed that they learn those Things that are likely to be *most useful* and *most ornamental*, Regard being had to the several Professions for which they are intended.

All should be taught to write a *fair Hand*, and swift, as that is useful to All. And with it may be learned something of *Drawing* by Imitation of Prints, and some of the first Principles of Perspective.

Arithmetick, *Accounts*, and some of the first Principles of *Geometry* and *Astronomy*.

The *English* Language might be taught by Grammar, in which some of our best Writers, as *Tillotson*, *Addison*, *Pope*, *Algernon Sidney*, *Cato's* Letters, &c should be classicks: The *Stiles* principally to be cultivated, being the *clear* and the *concise*. Reading should also be taught, and pronouncing, properly, distinctly, emphatically; not with an even Tone, which *under-does*, nor a theatrical, which *over-does* Nature.

To form their Stile, they should be put on Writing Letters to each other, making Abstracts of what they read; or writing the same Things in their own Words; telling or writing Stories lately read, in their own Expressions. All to be revised and corrected by the Tutor, who should give his Reasons, explain the Tone and Import of Words, &c.

To form their Pronunciation, they may be put on making Declamations, repeating Speeches, delivering Orations, &c. The Tutors assisting at the Rehearsals, teaching, advising, correcting their Accent, &c.

But if HISTORY be made a constant Part of their Reading, such as the Translations of the *Greek* and *Roman* Historians, and the modern Histories of antient *Greece* and Rome, &c., may not almost all Kinds of useful Knowledge be that way introduced to Advantage, and with Pleasure to the Student? As

GEOGRAPHY, by reading with Maps, and being required to point out the Places *where* the greatest Actions were done, to give their old and new Names, with the Bounds, Situation, Extent of the Countries concern'd, &c.

CHRONOLOGY, by the Help of Helvius or some other Writer of the kind, who will enable them to tell *when* those Events happened; what Princes were Comtemporaries, what States or famous Men flourished about that Time, &c. The several principal Epochs to be first well fix'd in their Memories

ANTIENT CUSTOMS, religious and civil, being frequently mentioned in History, will give occasions for explaining them; in which the Prints of Medals, Basso Relievo's, and antient Monuments will greatly assist.

MORALITY, by descanting and making continual Observations on the Causes of the Rise or Fall of any Man's Character, Fortune, Power, &c., mentioned in History; the Advantages of Temperance, Order, Frugality, Industry, Perseverance, &c. &c. Indeed the general natural Tendency of Reading good History, must be, to fix in the Minds of Youth deep Impressions of the Beauty and Usefulness of Virtue of all Kinds, Publick Spirit, Fortitude, &c.

History will show the wonderful effects of ORATORY in governing, training and leading great Bodies of Mankind, Armies, Cities, Nations. When the Minds of Youth are struck with Admiration at this, then is the Time to give them the Principles of that Art, which they will study with Taste and Application. Then they may be made acquainted with the best Models among the Antients, their Beauties being particularly pointed out to them. Modern Political Oratory being chiefly performed by the Pen and Press, its Advantages over the Antients in some Respects are to be shown; as that its Effects are more extensive, more lasting, &c.

History will also afford frequent Opportunities of showing the Necessity of a Publick Religion, from its Usefulness to the Publick; the Advantages of a Religious Character among private Persons;

the Mischiefs of Superstition, &c., and the Excellency of the CHRISTIAN RELIGION above all others antient or modern.

History will also give Occasion to expatiate on the Advantage of Civil Orders and Constitutions, how Men and their Properties are protected by joining in Societies and established Government; their Industry encouraged and rewarded, Arts invented, and Life made more comfortable: The Advantages of *Liberty*, Mischiefs of *Licentiousness*, Benefits arising from good Laws and a due Execution of Justice, &c. Thus may the first Principles of sound *Politicks* be fixed in the Minds of Youth.

On *Historical* Occasions, Questions of Right and Wrong, Justice and Injustice, will naturally arise, and may be put to Youth, which they debate in Conversation and in Writing. When they ardently desire Victory, for the sake of the Praise attending it, they will begin to feel the Want, and be sensible of the Use of *Logic*, or the Art of Reasoning to *discover* Truth, and of Arguing to *defend* it, and convince Adversaries. This would be the time to acquaint them with the Principles of that Art. *Grotius*, *Puffendorff*, and some other Writers of the same kind, may be used on these Occasions to decide their Disputes. Publick Disputes warm the Imagination, whet the Industry, and Strengthen the natural Abilities.

When Youth are told, that the Great Men whose Lives and Actions they read in History, spoke two of the best Languages that ever were, the most expressive, copious, beautiful; and that the finest Writings, the most correct Compositions,the most perfect Productions of human Wit and Wisdom, are in those Languages which have endured Ages, and will endure while there are Men; that no Translation can do them justice, or give the Pleasure found in Reading the Originals; that those Languages contain all Science; that one of them is become almost universal, being the language of Learned Men in all Countries; that to understand them is a distinguishing ornament, &c. they may be thereby made desirous of learning those Languages, and their Industry sharpen'd in the Acquisition of them. All intended for Divinity should be taught the *Latin* and *Greek;* for Physick, the *Latin*, *Greek*, and *French;* for Law, the *Latin* and *French;* Merchants, the *French*, *German*, and *Spanish;* and though all should not be compell'd to learn *Latin*, *Greek*, or the modern foreign Languages; yet none that have an ardent Desire to learn them should be refused; their

English, Arithmetick, and other Studies absolutely necessary, being at the same Time not neglected.

If the new *Universal History* were also read, it would give a *connected* Idea of human Affairs, so far as it goes, which should be followed by the best modern Histories, particularly of our Mother Country; then of these Colonies; which should be accompanied with Observations on their Rise, Encrease, use to *Great Britain*, Encouragements, Discouragements, &c., the Means to make them flourish, secure their Liberties, &c.

With the History of Men, Times, and Nations, should be read at proper Hours or Days, some of the best *Histories of Nature*, which would not only be delightful to Youth, and furnish them with Matter for their Letters, &c., as well as other History; but afterwards of great use to them, whether they are Merchants, Handicrafts, or Divines; enabling the first the better to understand many Commodities, Drugs, &c., the second to improve his Trade or Handicraft by new Mixtures, Materials, &c., and the last to adorn his Discourses by beautiful Comparisons, and strengthen them by new Proofs of Divine Providence. The Conversation of all will be improved by it, as Occasions frequently offer of making Natural Observations, which are instructive, agreeable and entertaining in almost all Companies. *Natural History* will also afford opportunities of introducing many observations, relating to the Preservation of Health, which may be afterwards of great use. *Arbuthnot* on Air and *Aliment*, *Sanctorius* on Perspiration, *Lemery* on Foods, and some others, may now be read, and a very little Explanation will make them sufficiently intelligible to Youth.

While they are reading Natural History, might not a little *Gardening*, *Planting*, *Grafting*, *Inoculating*, &c., be taught and practised, and now and then Excursions made to the neighboring Plantations of the best Farmers, their Methods observ'd and reason'd upon for the Information of Youth? The Improvement of Agriculture being useful to all, and Skill in it no Disparagement to any.

The History of *Commerce*, of the Invention of Arts, Rise of Manufactures, Progress of Trade, Change of its Seats, with the Reasons, Causes, &c., may also be made interesting to Youth, and will be useful to all. And this with the Accounts in other History

of the prodigious Force and Effect of Engines and Machines used in War, will naturally introduce a Desire to be instructed in *Mechanicks*, and to be informed of the Principles of that Art by which weak Men perform such Wonders, Labour is sav'd, Manufactures expedited, &c., &c. This will be the Time to show them Prints of antient and modern Machines, to explain them, to let them be copied, and to give Lectures in Mechanical Philosophy.

With the whole should be constantly inculcated and cultivated, that *Benignity of Mind*, which shows itself in *searching for* and *seizing* every opportunity *to serve* and *to oblige;* and is the Foundation of what is called *GOOD BREEDING;* highly useful to the Possessor, and most agreeable to all.

The Idea of what is *true Merit*, should also be often presented to Youth, explain'd and impress'd on their Minds, as consisting in an *Inclination* join'd with an *Ability* to serve Mankind, one's Country, Friends and Family; which *Ability* is (with the Blessing of God) to be acquir'd or greatly increas'd by *true Learning*, and should indeed be the great *Aim* and *End* of all Learning.[1]

In accordance with the general tenor of the proposals of 1749, the academy was organized in three schools, the English, the Latin, and the mathematical, each with a separate master. In 1754, a fourth school, the philosophical, was organized to offer logic, rhetoric, and natural and moral philosophy to advanced students. Although the conduct of this school fell short of Franklin's modern notions, it set up standards which were influential in ushering in a new era in American curriculum practice. Other academies which were established during the remainder of the eighteenth century also showed much independence of tradition in their curricula and set up such objectives as preparation for the real business of living and acquaintance with an expanding body of knowledge. The academy at Exeter, for example, was provided in 1778 by its constitution with

[1] Montgomery, T. H. *A History of the University of Pennsylvania*, 1749–1770. George W. Jacobs & Co., Philadelphia, 1900. Pp. 497–500.

the following objectives and curriculum: "the *first* and *principal* object of this Institution is the promotion of true *PIETY* and *VIRTUE;* the *second,* instruction in the English, Latin, and Greek Languages together with Writing, Arithmetic, Music, and the Art of Speaking: the *third,* practical Geometry, Logic, and Geography; and the *fourth,* such other of the Liberal Arts and Sciences or Languages, as opportunity and ability may hereafter admit, and as the *TRUSTEES* shall direct." [1]

The curriculum of the conventional, early modern school represents the need for an army of Swifts, Defoes, and Franklins. While scientific discovery was progressing at a rate seldom if ever equaled, schoolboys were still forced to rely upon the inexact although at the time picturesque accounts of the Middle Ages. The makers of the textbooks of this period show greater reliance upon the "properties of things" as revealed by imagination, anecdotes told by travelers to a gullible world, and early guesses than upon the more exact reports of experimentalists who had read or acted upon Bacon's suggestions for the advancement of learning. While science was remaking the world outside the school, the schools were being more completely cast in the molds of ancient customs and lore. Fifty schoolmasters such as Vittorino of the fifteenth century, if organized as the present National Education Association is organized, could have revolutionized and modernized the schools of any country or century from that century to the nineteenth. But complacency rather than criticism ran in the veins of teachers. Despite activity which led to the preparation of new books for use in the schools, these books were patterned closely after their predecessors and based entirely upon content centuries old. Le Grand (1694), for example, in

[1] Here quoted from Brown, *op. cit.,* p. 195.

his *Entire Body of Philosophy*, announced that Egypt has a dry climate because the earth is so compact that no vapors can be transmitted by it. Gordon (1730, 12th edition), in his *Geography*, found a place for such infallibly true paradoxes as this: "there is a certain place of the earth, at which if two men should chance to meet, one would stand upright upon the soles of the other's feet, and neither of them should feel the other's weight, and yet they should both retain their natural posture." [1] Guthrie (1792), in his *Geographical Grammar*, informs his readers about the strange inhabitants of Connecticut, a place in which deformities rarely develop because the women have learned from the Indians how to keep their infants straight "by means of a board," and that the citizens of this commonwealth are disallowed to "converse about whist, quadrilles or operas." These samples of content should, however, be judged in the light of the entire courses of which they were but a small part. Other portions of the books treated many topics in a fashion that was as accurate as the existing knowledge would permit; mathematical, physical, and political geography were included in these early compendiums.

The whole of the science came from tiny rootlets far down in the mold of ignorance and superstition. A struggle it was with generally accepted religion and with strongly intrenched conservatism for this little plant to push its way up on a level with the humanistic branches. Latin had been in the saddle for centuries, practically alone, beating off every aspirant who wished to share that honor. Greek never climbed up alongside her; logic, ethics, and philosophy even were only adjuncts. Mathematics had but little more success. Finally the last champion from the outside comes forward in the guise of science. At first he had to wear the Latin garb and to follow the beaten track of question and answer, of dogmatic statement,

[1] Here quoted from Colyer Meriwether, *Our Colonial Curriculum*. Capital Publishing Company, 1907. (Out of print.) P. 143.

of directions without reasons, of dead memorizing of the words of the printed page or from the master's lips. Slowly inventiveness came to the aid with apparatus, and eventually with laboratories, but not until far into the nineteenth century. There is no evidence whatever that any of this apparatus was used by the students. Very likely the class only viewed portions of it as the teacher performed experiments in front to illustrate some point.

Of the scientific attitude as it is cultivated to-day, of cold, dispassionate study of nature without the lingering flavor of authority or of religion, our colonial ancestors knew nothing. Of the great range of subjects now in profusion in one-half of our colleges the colonial youth had no conception. Substantially, he had no geology, no zoology, no chemistry, and but little botany. Physics alone was prepared for him with anything like the fullness of to-day. For a long time it was an off-shoot of mathematics from which it originally sprang. But in the dim light of the dawn the soil was being stirred and the seed being dropped from which we have reaped so abundantly. To that extent are we indebted to our colonial ancestors for preparing the way.[1]

Curricula of the early national period. During the early national period America maintained two forms of secondary education. One of these, the decadent classical education of the Latin grammar schools, was in a weakened state. Certain outstanding schools were, however, exceptions and successfully withstood the competition of academies and the indifference and rigors of the later colonial and early national periods. Such schools were the Hopkins Latin Grammar School of New Haven and the Boston Public Latin School. Of the latter school, records of the complete curriculum of 1789 have been preserved. At a meeting of the school committee in that year it was voted that the boys at entrance to this school should be at least ten years of age, that the school should be divided into four years, and that the following books should be used in the respective classes:

[1] Meriwether, *op. cit.*, p. 224.

First year — (Latin only). Cheever, *Accidence;* Corderius, *Colloquies;* Nomenclator, *Æsop's Fables;* Ward, *Latin Grammar,* or Eutropius.

Second year — (Latin only). Clarke, *Introduction;* Ward, *Latin Grammar,* Eutropius; Selections from *Old Testament History* or Castilio, *Dialogues;* Garretson, *Exercises* — in Latin Composition.

Third year — (Latin and Greek). Cæsar, *Commentaries;* Cicero, *Epistles* or *Offices;* Ovid, *Metamorphoses;* Virgil, *Æneid;* Latin Composition based upon King, *History of the Heathen Gods;* Greek Grammar.

Fourth year — (Latin and Greek). Virgil, *Æneid;* Cicero, *Orations;* Horace; Latin Composition, continued; *Gradus ad Parnassum; Greek Testament;* Homer.[1]

Between 1814 and 1828 this Boston school, under Headmaster Gould, added several courses in English, mathematics, history, and geography. His own account of the curriculum is summarized in the following five-year program of the school:[2]

First Year

Latin Grammar	Geography
Arithmetic	Penmanship[3]

Second Year

Latin	English	History

Third Year

Latin	Greek	English

Fourth and Fifth Years

Latin	History	Algebra
Greek	Geography	Geometry
English	Arithmetic	Trigonometry

[1] Jenks, H. F. *Catalogue of Boston Public Latin School,* 1886. Pp. 286f.
[2] *Ibid.,* pp. 60–64.
[3] The boys were dismissed "an hour before school is done, that they may attend a writing school."

This program of the Boston Public Latin School represents the conditions in only a few outstanding schools. Brown cites the Princeton grammar school as another in which similar curriculum enrichment took place, but concludes by saying that the classical instruction of this period was generally "flat and unprofitable in the extreme." [1]

The other form of secondary education of this period was that provided by academies. Although the Franklin academy fell somewhat short of the hopes of its founder, it opened to America such realistic education as had already been provided by similar schools in Europe. At the close of the eighteenth century when Latin grammar schools still limited their curriculum to the classics, the academies were offering, in addition to the classics, the following courses: English, French, geography, arithmetic, geometry, history, natural and moral philosophy, logic, astronomy, and natural law.[2] By 1818 the program of studies of Exeter were divided into two curricula: [3]

Classical Curriculum (Four years)	*English Curriculum* (Three years)
Latin	English Grammar, Rhetoric, and Composition
Greek	Declamation and Forensics
English Grammar and Composition	Arithmetic
Declamation	Algebra
Arithmetic	Geometry
Algebra	Plane Trigonometry
Geometry	Mensuration
Ancient History	Surveying

[1] *Ibid.*, p. 278.

[2] These subjects were named on the certificate issued in 1799 by Exeter Academy to Lewis Cass. Cf. G. G. Bush, *History of Education in New Hampshire.* United States Bureau of Education, *Circulars of Information,* 1898, No. 3. P. 108.

[3] Bell, C. H. *Phillips Exeter Academy in New Hampshire.* Exeter, 1883. Appendix. Pp. 93f.

Classical Curriculum (Four years)	*English Curriculum* (Three years)
Geography	Navigation
	Ancient, Modern, and United States History
	Geography
	Natural Philosophy
	Chemistry
	Moral Philosophy
	Political Philosophy
	Logic

Although contemporary classical schools attempted primarily to meet college entrance requirements, the academies generally went far in advance of those requirements. In addition to the case of Exeter as just cited, many other institutions offered curricula which were either more realistic than the courses then offered by colleges or else were paralleled by such curricula.[1] As far as American education is concerned, this period was dominated by a *laissez-faire* policy: some schools were vigorous and liberal; others were weak and formal. Decadent humanism was still cramping the development of the schools of the old order, and the new schools, being subject to no external standardizing agency, were dependent almost solely upon the leadership of their own successions of masters.

Foreign schools of this period fared better only in Germany. In England the nonconformist, eighteenth-century academies had waned, and "the public schools were in a parlous state." [2] This narrow classical curriculum could not attract the boys of families outside the direct influence of the public schools.

[1] Cf. Brown, *op. cit.*, p. 249.
[2] Archer, R. L. *Secondary Education in the Nineteenth Century.* Cambridge University Press, 1921. P. 52.

The work of the sixth and fifth forms, which were taken together by the head master, gives the best indication of the standard which a classical school of those days aimed at. There were ten construing lessons in a full week: Homer's *Iliad*, 35 lines, two; Lucian, 40 lines, two; Vergil's *Æneid*, 30 lines, two; *Scriptores Romani*, 40 lines, two; *Pœtæ Græci*, 35 lines, one; Horace (hexameters), 60 lines, one; and seven repetition lessons, viz., in the pieces translated from Homer, Vergil, Horace, and the Greek poets, and in the Greek Testament (one) and a book of Latin selections (two). Horace's *Odes* and Greek plays were substituted for some of the other books during a part of the year. Three compositions were written each week, an original Latin theme, a set of Latin elegiacs, and for the sixth a set of Greek iambics or for the fifth of Latin lyrics. Declamations and speeches came at the end of the term.[1]

It was this education that the *Edinburgh Review* in 1830 criticized relentlessly as fragmentary when considered as classical training, and antiquated when considered as training for modern life. No integrating course in ancient history was provided, so that it was "doubtful if any boy" knew "what the Persian and Peloponnesian wars were." The works were not arranged in a logical order, nor were adequate explanatory suggestions given about anything save "grammatical and metrical trifling." In this way attention was "distracted from the really important lessons of history and philosophy" and directed to the same husks of learning that have for nearly two thousand years attracted the attention of certain pedantic Latinists. Worse than some pedants, these did not, according to the *Review*, even keep themselves abreast of pedantry — their books and notes "contain much that is useless and much that is inaccurate." If, as Archer observes, the reviewer had condescended to discuss the teaching of the lowest classes as well as that of the upper school, he might have found a year of forms and rules before

[1] Archer, *op. cit.*, p. 18.

the simplest Latin was read.[1] Some of the historical foundations for the pedantic method of trying to teach pupils to read by depriving them of an opportunity to read thus appears! "The absence of all non-classical subjects save as despised 'extras' was too obvious a point of attack to be missed. Only one possible merit is allowed — the compositions stand out above the rest of the work. The Latin prose is very fair, and the verses may even be good."[2]

France made an abortive attempt in 1802 to reconstruct her secondary education. The law of that year stated that "Every school established by the communes or conducted by private individuals wherein are taught French, Latin, the first principles of geography, of history, and of mathematics, will be considered as a secondary school." This law, although superseded by regulations made in 1808 and 1810, established certain modern subjects in the curriculum. By the further regulations of 1828 and 1840, the sciences and modern languages, respectively, were placed upon standards which approached those of the classics.[3]

The success of Germany in reviving and continuing her development of education during this period was due largely to the belief that her military defeats early in the nineteenth century were an indictment of her educational policy. Two lines of reform took place in reply to this indictment: "first, the centralization of the school system, the conversion of a vast collection of schools of all grades into a single system capable of direction, supervision and management by a central authority acting for the state; second, the selection of materials for instruction, the formation of courses of study and the methods of teaching best calculated

[1] Archer, *op. cit.*, p. 20.
[2] *Ibid.*, p. 20.
[3] Cf. F. E. Farrington, *French Secondary Schools*, Longmans, Green and Company, 1910. Chapter IV.

to subserve the needs of the different classes of society while promoting the interests of the state."[1] The second line of this reform, the changes in subject matter, was a part of the widespread attempt to develop and include in school programs a larger and larger amount of the *Realism* or "real" subjects.[2]

The modern formative period of secondary school curricula. The years from 1820 to 1890 can be denoted as the modern formative period of secondary school curricula. In America this period stretches from the establishment of the high school in 1821 to the agitation which led to the appointment of the Committee of Ten in 1892. In England, it extends from the notable revival of about 1830 to the somewhat general adoption by 1890 of the reform which had for a quarter of a century been advocated by critics of the old curricula and pedantic methods. In Germany, the period is more extensive and begins with the reconstruction of the modern German educational system after the defeat at Jena (1806) and extends to the revision of the higher school programs in 1882. In France, the modern formative period opens with the law of 1802 which laid the basis for modern secondary education in that country and extends to the program of 1890–1891 which attempted to end the "eternal controversy" between the advocates of classicism and realism. Owing to the fact that excellent accounts of these curriculum developments in Europe are of easy access,[3] attention will here be given only to the forming of

[1] Russell, *op. cit.*, p. 86.

[2] Further accounts of the struggle between the classics and the sciences will be given in Chapter VI in discussing Combe, Spencer, and Huxley.

[3] For an account of English developments, see Archer, *op. cit.*, Chapters III, V, VII, and XII. For French Schools, see F. E. Farrington, *op. cit.*, Chapter IV. For German schools, see J. E. Russell, *op. cit.*, Chapter IV. Chapter VI of the present treatise contains an account of certain foreign educational writings of this period.

American curricula. Three causes of development in America will be considered: (1) legislative enactments; (2) collegiate influences; and (3) educational prophets and publicists. Finally, actual curriculum practices will be presented.

1. *Legislative enactments.* The legislative enactments insofar as they affected curriculum practices varied from state to state. Certain New England commonwealths are able, however, to point with pride to the continuance of pioneering in things good. When the Boston School Committee reported in 1821 that the mode of education then practiced was not sufficiently extensive or otherwise calculated "to bring the powers of mind into operation nor to qualify a youth to fill usefully and respectably many of those stations, both public and private, in which he may be placed," that committee heralded the American high school.[1] In accordance with this plan, the English Classical School was opened in May of that year, and in 1824 this school was named the English High School.

This new secondary institution so favorably impressed the legislators of Massachusetts that, in 1827, they enacted a law which required the establishment of high schools in "every city, town, or district, containing five hundred families." The same law required, furthermore, that such schools should offer instruction in United States history, bookkeeping, algebra, geometry, and surveying; and, in towns of four thousand inhabitants, the law required also that instruction be given in Latin, Greek, rhetoric, logic, and an additional course in history. Few permanent and significant legislative changes were made until 1857, when United States history and algebra were transferred to the elementary school and the following subjects were required in the high schools located in towns of five hundred families:

[1] This Committee's report is reprinted in E. E. Brown, *op. cit.*, pp. 298–301.

Latin, natural philosophy, chemistry, botany, and civics; schools located in towns of four thousand inhabitants were compelled to offer also French, astronomy, geology, intellectual and moral science, and political economy. Save for placing high-school history on the elective list in 1859, no further important legislative changes were made until 1898.[1]

Despite the notable record of Massachusetts in pioneering by placing the new public secondary school upon a statutory basis, other states, as New York, provided equally potent regulative devices.[2] Following upon a series of mandatory enactments by which the regents of New York had developed the academies into college preparatory institutions, the legislators of that state passed an act of 1827 "whereby the higher English branches were put on a par with the classics as a means of qualifying a school for state aid."[3] As a result of this law, the regents, in 1828, passed an ordinance which provided that academies should receive state aid upon the basis of the number of pupils who were pursuing relatively advanced courses in English and Latin. As this legislation did not essay to prescribe complete curricula, the schools, as will presently be shown, generally exceeded the requirements of these regulations.

Still greater freedom was given to local authorities in the development of curricula in other states. For example, the "curriculum was not usually specified in the articles of incorporation (of the earliest high schools in Ohio), but was frequently hinted at in the right given to the trustees to determine what branches of the 'arts and sciences' should

[1] For a comprehensive account of curriculum legislation in Massachusetts, see A. J. Inglis, *The Rise of the High School in Massachusetts.* Teachers College, Columbia University, 1911. Chapters II–III.

[2] The present discussion of legislation in New York is based upon Elsie G. Hobson, *Educational Legislation and Administration in the State of New York from 1777 to 1850.* University of Chicago, 1918. Especially pp. 45–51.

[3] *Ibid.*, p. 46.

be taught, or sometimes the phrase ran 'learned languages, arts and sciences,' or branches of a 'polite and liberal education.'[1] Another example of this freedom is found in Mississippi, where nothing in the charters granted to secondary schools (academies) indicates "the curricula of these schools. A few charters authorize the boards of trustees to 'ordain the course of study,' but this function is usually left by implication to the faculties, with no suggestion from the state as to what the curriculum should contain. The distinction drawn in 1821 as to requirements for a license to teach in the common schools and in the academies indicates the chief difference in the minds of the legislators of that time between the academy and the common school; in addition to the common-school subjects, the teachers in academies were required to be qualified to teach Latin and Greek."[2] If, as one is inclined to believe, the foregoing examples are representative of legislative practices in different regions of the United States, one can readily grant that legislators have wisely refrained from enacting laws which would unduly cramp either local authorities or state supervisory agencies.

2. *Collegiate influences.* Collegiate influences during the nineteenth century can conveniently be divided into two groups: those which existed before 1870; and those which existed after that time. The influences prior to 1870 are comparable roughly with the tendencies of Latin grammar schools; the influences after 1870 are comparable with the liberating tendencies of the academies. The reasons for the formal tendencies of the first seven decades grew out of the traditional character of college methods and studies; the

[1] Miller, E. A. *The History of Educational Legislation in Ohio from 1803–1850.* University of Chicago, 1920. P. 85.

[2] Weathersby, W. H. *A History of Educational Legislation in Mississippi from 1798 to 1860.* University of Chicago, 1921. Pp. 76–77.

reasons for the broadening tendencies of the last three decades are found largely in the post-war realistic influences and in the appointment of Charles William Eliot as president of Harvard University.

The academy which Defoe attended in the seventeenth century and scores of academies and high schools in America before 1850 far exceeded in breadth if not in depth and character the requirements for admission to leading American colleges during the greater part of the nineteenth century. For example, four great colleges — Columbia, Harvard, Princeton, and Yale — required in 1800 nothing save Latin, Greek, and arithmetic, Harvard only omitting arithmetic until 1807.[1] The additional requirements up to 1870 included only algebra, geometry, geography, English grammar, and, in Harvard only, ancient history. If, therefore, one can judge the influence of college requirements upon secondary school practices, one can conclude that the influence was unfavorable to the continuance of the comprehensive courses offered in secondary schools. Both the academy and the high school had been established to meet demands which were overlooked by college preparatory courses; both of these young secondary institutions soon became so engrossed in the preparation of pupils for college that they tended to neglect their own original plans and purposes. The failure of colleges to recognize the preparatory value of certain forms of subject matter was largely responsible for this perversion of secondary schools. Three points which favor the position of colleges in this matter are, however, worth mentioning. First, it was probably important that secondary schools provide college prepara-

[1] Broome, E. C. *A Historical and Critical Discussion of College Admission Requirements.* Columbia University, 1902. This monograph provides the basis for the present sketch of college influences. Chapter II deals with admission requirements during the nineteenth century.

tory training; and yet, if it can be proved that preparatory training for colleges was not the best training for pupils who did not go to college, then it is unfortunate that the colleges monopolized the attention of secondary schools. Second, the colleges were probably correct in insisting that secondary schools provide sound training in the subjects which pupils pursued.[1] If the contention of scholars that the science teaching was poorer than the teaching of the classics is true, the colleges may have been justified in requiring secondary schools to specialize in the classics. It was obvious, however, to followers of the international realistic movement which has been described above that this procedure of colleges was extremely reprehensible. A third defense of the colleges can be mentioned, although its ramparts have long since been shaken: it was sincerely believed by college administrators of the past century that only certain subjects provided the mental discipline which was required as preparatory to college tasks.[2] Throughout the seventy years under discussion, it was possible, as it still is, for the college man to say magnanimously that higher institutions do not object to a broad secondary school program of studies and that colleges do not seek undue favors from secondary schools. The greatest difficulty with this position is that it shows utter lack of leadership and thus opens to opponents of higher education an analogous course of reasoning. That is, if secondary schools neglect one important function in order to perform another, the assumption of leadership by supporters of hitherto neglected functions may lead to a reversal of favoritism.

[1] Cf. the statement in *The Calendar of the University of Michigan* (p. 41) for 1894–1895, and subsequent issues: "It should be remembered that the university desires *mastery of Latin;* the choice of selections studied is of secondary importance." (Here quoted from Broome, *op. cit.*, p. 65.)

[2] It is not here suggested that this belief has now disappeared, but that the bases for the belief have been weakened or changed.

If, however, one continues to trace the relationship between secondary and collegiate institutions to the end of the nineteenth century, one finds that a lack of curriculum leadership did not persist long beyond the middle of the century. The last three decades of that century are marked not only by college leadership in curriculum problems, but also by a notable influence of secondary schools upon college entrance requirements. Indeed, the strength of the leadership of colleges during those decades may be attributed in no small degree to President Eliot's ability to recognize the values of realistic subjects, to show how to improve the teaching of those subjects, and to recognize the protagonists of old and new subjects.

From 1870 to 1900 three important groups of subjects gained a recognized place in college admission requirements: English literature and composition, modern languages, and natural science. At the same time, changes took place in the original admission subjects. In the classics, mastery rather than specific readings became the requisite; quadratics was added to the requirement of 1870; in geometry, the whole of plane geometry became a general requirement, and to this some colleges added solid geometry; all branches of social studies were either increased in amount or changed in character, or both. Broome summarizes the work of these decades as follows:

> During the last thirty years (1870–1900) the tendencies in the development of college admission requirements that were prominent up to 1870 have continued. The addition of new subjects has widened the range of entrance requirements. The amount required in the original subjects has increased. In mathematics, history, English, and science the advance has been considerable, while even the classical requirement has increased slightly. Colleges which still require both Latin and Greek for admission not only require more in these languages, but considerably more in

mathematics, history, and English, as well as modern language and, perhaps, some branch of science. This continued advance in entrance requirements is due, of course, in general, to the rapid development of higher education and the constant broadening of the field of knowledge; but what has influenced admission requirements most has been the gradual transformation of the American college into the American university. In order to meet the demand for advanced study and research the college has constantly pushed the work of a distinctly secondary character into the preparatory school. This movement has been accelerated also by the increased popular demand for advanced studies in what has sometimes been called the "people's college," the public high school; for that institution is at home, is easily accessible, and is free. A third tendency, which belongs more strictly to the method of the entrance examination than to the subjects, is that examinations are becoming tests of power rather than mere acquisition of facts. Instances of this tendency are the emphasis placed on sight translations in the language examinations, the growing importance of English composition, of the solution of original problems in geometry, and of independent experimental work in science.[1]

As a result of this latter tendency in college admission requirements there has been a significant revolution in preparatory school methods of teaching, a shifting of the emphasis from stultifying memoriter work to that more quickening sort which calls for independent thought and constructive ability. In the teaching of foreign languages the actual use of the language and wide reading in its literature have supplanted much of the old-time exhaustive study of formal grammar; and the study of science has moved from the library to the laboratory.[2]

3. *Educational prophets and publicists.* The work of several American prophets and publicists commands the attention of students of nineteenth-century curricula. During the generation which closed about 1840 three men, John

[1] Original problems in geometry and experimental work in science are part of the examination for admission to Harvard, Yale, Columbia, Cornell, Leland Stanford, and several other leading colleges.

[2] Broome, *op. cit.*, pp. 68–69.

Griscom, Josiah Quincy, and Alexander Bache fused the ideas and practices of Europe and America into plans for secondary education in New York City, Boston, and Philadelphia. Griscom's book, *A Year in Europe* (1819), which Henry Barnard named as the most influential educational book of the first half of the nineteenth century, contains an extended account of the Edinburgh (Scotland) High School. This account, together with Griscom's personal influence, seems to have led to the naming of the first high schools of Boston and New York City and to a well-defined attitude in regard to the curricula of these new schools.[1] This attitude was that the chief purpose of the high school was to prepare pupils for such activities as they were destined to pursue after their schooldays were over. As pupils enter the school with different plans, it appears plain that "their circumstance must require corresponding classifications of scholars and of studies." Consequently, the High-School Society grouped the studies as constants and electives. President Quincy's intimate and general agreement with Griscom indicates that his own support of a school "to enable the mercantile and mechanical classes to obtain an education adapted for those classes" and his later support of an elective system at Harvard were due in part to Griscom's influence.

Although Bache's *Report on Education in Europe* (1839) was made to guide the trustees of Girard College in formulating a program of studies for that college, this report had a wide influence upon all grades of instruction. In the portion of this document which is devoted to secondary education,[2] Bache reported in detail upon both classical and realistic curricula as he observed them in Europe. In recognizing

[1] Cf. the *First Annual Report of the High-School Society* (New York City), pp. 6–7 and E. Quincy, *Life of Josiah Quincy* (Boston, 1867).

[2] Pp. 362–535.

the value of secondary instruction as preparatory for both professional and practical occupations, he gave due attention to the views already expressed by Griscom and Quincy. In attempting to show the value of both classical and scientific studies to students in general, he supported the policy finally adopted in American secondary education. One of the most significant issues raised by Bache was that certain countries or localities often regard as experimental and radical the long-established and successful practices of other countries. Despite many differences in the details of education in different countries, the major problems are, Bache asserts, too much alike to admit of certain curriculum differences. By comparing the educational problems of different countries, Bache finds that there are

> high general purposes to be served in the mental training of youth, on the more or less successful modes of applying which, comparison will throw the light of experience. If a satisfactory intellectual education at Berlin requires the study of Latin, Greek, the vernacular, French, geography and history, mathematics, physics, natural history, and intellectual philosophy it is not likely that the same can be accomplished elsewhere by the study of Latin, Greek, geography, a small portion of history, and less of arithmetic and geometry. If it is possible at Berlin to devote sufficient time to the branches enumerated in the Prussian program, to make them really sources of mental culture and of positive knowledge, consistently with a thorough knowledge of the classics, it must be so in the same interval of time anywhere else. Hence there need be no apprehension even on the part of those who consider the attainment of classical knowledge for itself as the great end of instruction, in regard to the effects of an increased attention to other branches of knowledge, unless it can be shown that the German youth are inferior in these attainments, which has never, I believe, been even attempted, or unless it can be proved that they are naturally of higher intellectual powers than those of other countries.[1]

[1] Bache, *op. cit.*, pp. 503–504.

The most important prophet and publicist of secondary education during the middle of the nineteenth century was Henry Barnard. His views on curricula were given in a letter which he wrote to Principal Capron of Hartford in 1847. The following passage from the epistle shows this scholar's point of view:

The course of instruction which is here provided for the physical, intellectual, and moral training of the pupils . . . and rising and spreading out into all of those studies which in one direction take hold of all the occupations of society, the farm, the workshop, the counting-room, the deck, the home on the other discipline and inform the mind . . . — such a course seems to me eminently judicious. It meets the demand of our age for an education in science which shall make the wind and the stream, and the still more subtle agents of nature, minister to our material wants. . . . At the same time it does not ignore those apparently less practical studies, especially the mathematics and the classics. . . . I do not believe that any amount of applied science, and the largest amount practicable should be given in this and other institutions of higher learning, or that any attention which may be bestowed on the English language only — and whatever else is taught or omitted, the English language and literature should ever hold a prominent, the prominent place in the actual aims and results of your scheme of study — can ever train the three great faculties of reason, memory, and imagination, to their full, natural, and harmonious development. But while I hold this not hastily formed opinion, I see no reason why the instruction of our schools, from the oral or primary, up to the university, should not deal with common things, with the principles, the phenomena and duties of everyday life; — why sewing, and a practical knowledge of domestic economy should not find a place somewhere in the training of every girl; and a "round about common sense," the power of applying the mind and the hands readily to all sorts of work in helping himself and other people, about the house, the shop, or the farm, be the result of the house and school training of every boy. This was, and still is to some extent, the glory of our best New England schools and domestic education. And to all this should

now be added the modern development of science in their application to all our great national industries.[1]

Four women of the nineteenth century, Catherine Beecher, Mary Lyon, Emma Willard, and Almira Phelps, added their arguments to those of the leaders already named in the battle for equal rights of realistic and classical school studies.[2] Particularly vigorous was Mrs. Phelps in her criticism of the "affectation and frivolity" and superficiality of certain female seminaries of about 1840. This advocate and teacher of science worked with her sister, Emma Willard, to provide scientific as well as classical and literary curricula for girls. At the same time Mary Lyon labored in the same way at Mount Holyoke to make her school a "plant for development not of intellectual gymnasts but of enlightened useful women."

The last of the prophets to be discussed in this section is President Eliot. In setting forth his notions of a liberal education in 1884, he described the long periods of apprenticeship which had been undergone by Greek, science, and mathematics before these subjects were granted places of respectability in curricula. Greek, for example, as he asserts, was entirely neglected in Italian schools until about 1400, although Petrarch and his enthusiastic comrades labored in its behalf during the middle of the fourteenth century. And not until long after that time did Greek enjoy a high place in the schools of any country of western Europe. The sciences were not yet fully admitted to the

[1] Barnard, Henry. "Public High School in a Graded System" (a letter to the principal of the Hartford, Connecticut, high school). Barnard's *American Journal of Education*, XXII, 365–366. 1871.

[2] See Barnard's *American Journal of Education*, XXVIII, 65–96, 1878, on Mrs. Beecher; Beth B. Gilchrist, *The Life of Mary Lyon*, Houghton Mifflin Company, 1910; Barnard's *American Journal of Education*, VI, 125–168, 1858, on Mrs. Willard; and Vol. XVII of the same journal, pp. 611–617, 1867, on Mrs. Pheips.

curricula even at the time of the address under discussion. Mathematics was recognized as a valuable discipline until it was reconstructed by western Europeans; after that time the conservatives doubted its educational value.[1] All three of these subjects, Greek, science, and mathematics, as offered in 1884 had been compelled to submit to ridicule as frivolous, heterodox, and useless for discipline! Furthermore, the Middle Ages defined a liberal education in terms of seven formal subjects organized in ways which in 1884 were no longer held to be liberal. Instead of the mediæval liberal arts, there came the "new learning" of the early modern times. This new learning, which in content was largely a revival of ancient classics and mathematics, came in turn to be the program of conservatives, and looked disdainfully upon prospective newcomers to the curricula. This situation led Eliot to assert that, "History teaches boldness in urging the claims of modern literatures and sciences to full recognition as liberal arts."[2] Intelligent boldness in a modern world justified one, in Eliot's opinion, in admitting to high respectability English language and literature, French and German, natural science, and history. The wise men of the fifteenth century took the best intellectual and moral materials of their day and made a curriculum; if, in 1884, one followed the same procedure, this prophet believed that liberal amounts of the subjects just named would fall into secondary school curricula.

American curricular practices for the last one hundred years are recorded in catalogues and other brochures of different schools. For the sake of brevity, the practices of this period will be set forth chiefly in tabular form. The formative period of curricula-making as here limited opened

[1] Cf. Whewell, William. *Thoughts on the Study of Mathematics as Part of a Liberal Education* (1835).

[2] Eliot, C. W. *Educational Reform.* The Century Company, 1898. P. 97.

with a new institution which later became the high school. The first program of studies for this three-year school was as follows:

First year — English, arithmetic, and geography. (English included reading, literature, composition, and declamation.)

Second year — English, mathematics, history, and logic. (English included the same branches as in the first year; mathematics included algebra, geometry, trigonometry, and applied mathematics, as navigation and surveying; history included ancient and modern history and chronology.)

Third year — English, mathematics, history, natural science, and philosophy. (English, mathematics, and history included the same as for the preceding year; philosophy included logic and moral and political philosophy.)[1]

Except for the following additions, the program remained unchanged until 1852: the school report of 1829 states that masters may at their option add philosophy of history, chemistry, intellectual philosophy, logic, and drawing; to these, trigonometry, French, and study of the constitution of the United States were added in 1836. In 1852 the school added one year to its course and then adopted the following program of studies:

First year — Review of common elementary branches, ancient geography, general history, algebra, French, and drawing.

Second year — Algebra (completed), French, drawing, geometry, trigonometry, bookkeeping, rhetoric, constitution of the United States, and Paley's *Evidences of Christianity*.

Third year — Trigonometry, Paley, drawing, astronomy, natural philosophy, moral philosophy, political economy, natural theology, English literature, and French or Spanish.

Fourth year — Astronomy, intellectual philosophy, logic, Spanish, geology, mechanics, engineering, and higher mathematics.[2]

[1] Report of Boston School Committee, 1821.

[2] Report of 1852. It was requested also that exercises in English composition, declamation, reading, spelling, and grammar be given to the pupils as deemed necessary.

Five years after the opening of the first high school, the Girls' High School of Boston was opened (1826) with the following program of studies:

First year — (Required) Reading, Spelling, Writing words and sentences from dictation, English grammar, with exercises in the same, Composition, Modern and ancient geography, Intellectual and written arithmetic, Rhetoric, History of the United States.

(Allowed) Logic, or botany.

Second year — (Required) Reading, Spelling, Composition, Modern and ancient geography, Intellectual and written arithmetic, and Rhetoric continued. Elements of geometry, Natural philosophy, General history, History of England, Paley's *Natural Theology.*

(Allowed) Logic, Botany, demonstrative geometry, algebra, Latin or French.

Third year — (Required) Reading, Composition, Natural Philosophy, and Paley's *Natural Theology* continued, Astronomy, Treatise on the globes, Chemistry, History of Greece, History of Rome, Paley's *Moral Philosophy,* Paley's *Evidences of Christianity.*

(Allowed) Logic, algebra, principles of perspective, projection of maps, botany, Latin, or French.[1]

This program, together with that of the boys' school, seems to represent the best practices of the early high schools.

During the generation which followed the opening of the first high schools, these new schools assumed their dual function of college preparatory and finishing schools. Following this came, in turn, the division of the programs of study into classical and English curricula. Table II shows such curricula as they were offered in three superior schools of New England about 1850. Each of these curricula was but slightly modified for many years after the dates given in this table. Excellent reasons can be found in this table for the distinction between preparatory for college and preparatory for life. In the case of college preparatory students, the

[1] Adapted from Barnard's *American Journal of Education,* XIII, 246. 1863.

subjects of the high-school English curriculum were usually pursued in a more advanced fashion during the last two years of college.

TABLE II

THE CURRICULA OF THREE REPRESENTATIVE NEW ENGLAND HIGH SCHOOLS *

SUBJECTS	WORCESTER (1845)		CAMBRIDGE (1852)		HARTFORD (1858)	
	Classical	English	Classical	English	Classical	English**
Latin	4	—	4	—	4	4⅔
Greek	2	—	2	—	3	4⅔
French	—	¾	—	4	—	4
German	—	—	—	—	—	4
English	¾	1¼	4	4	—	2⅓
Mathematics						
Arithmetic	¾	¼	½	⅔	—	⅓
Algebra	1	½	2	2	—	1
Geometry	¾	¾	1⅔	1	—	1¼
Trigonometry	—	¾	—	⅔	—	1
Science						
Astronomy	—	½	—	⅔	—	⅔
Botany	—	¼	—	—	—	⅓
Chemistry	—	½	⅔	⅔	—	⅓
Geology	—	—	—	—	—	⅓
Natural Philosophy	—	¾	⅔	⅔	—	⅓
Physical Geography	—	—	—	—	—	⅓
Physiology	—	¼	—	—	—	⅓
Zoology	—	—	—	—	—	⅓
Social Studies						
History	—	¾	1	1	2	1⅓
Civics	—	¼	—	—	—	⅓
Political Economy	—	¼	—	—	—	⅓
Moral Philosophy	—	½	—	⅔	—	—
Mental Philosophy	—	¼	—	⅔	—	⅓
Logic	—	—	—	—	—	⅔
Geography	½	—	1	1	1	—
Bookkeeping	—	¼	—	⅓	—	⅓
Drawing	—	—	—	1	—	—

* Based upon catalogues of these schools. Here adapted from E. D. Grizzell, *Origin and Development of the High School in New England before 1865*. The Macmillan Company, 1923. Chapter XIV.

** Five-year course. Many optional subjects.

TABLE III

PERCENTAGES OF SCHOOLS OFFERING CERTAIN SUBJECTS IN 1866–1867. BASED UPON PROGRAMS OF STUDIES OF THIRTY REPRESENTATIVE CITIES FOR THAT YEAR.*

SUBJECTS	PERCENTAGES OF SCHOOLS OFFERING	SUBJECTS	PERCENTAGES OF SCHOOLS OFFERING
Algebra	100	Logic	23
Arithmetic	77	Mechanics	13
Astronomy	83	Mensuration	20
Bookkeeping	60	Mental Philosophy	87
Botany	80	Mineralogy	13
Calculus	17	Moral Science	67
Cæsar	50	Music	43
Chemistry	87	Natural Philosophy	100
Cicero	40	Natural History	30
Composition	80	Natural Theology	7
United States Constitution	53	Navigation	23
Declamation	60	Ovid	13
Drawing	33	Pedagogics	7
Engineering	7	Penmanship	33
English Grammar	80	Political Economy	43
English Literature	70	Physical Exercises	13
English Synonyms	17	Physical Geography	83
Etymology	27	Physiology	93
Evidences of Christianity	13	Reading	47
French	70	Rhetoric	93
Geometry	100	Sallust	27
Geology	70	Science of Government	23
German	50	Spanish	7
Greek	60	Spelling	20
History, Ancient	50	Surveying	47
History, Modern	87	Tacitus	7
Homer	53	Trigonometry	73
Horace	17	Virgil	47
Latin	90	Xenophon	60
		Zoology	13

* Baltimore, Boston, Cambridge, Chicago, Cincinnati, Cleveland, Dubuque, Fond du Lac, Hartford, Indianapolis, Lewiston, Maine; Louisville, Madison, Wisconsin; Manchester, New York, New Haven, Newark, Niles, Philadelphia, Portland, Providence, Rochester, Sandusky, San Francisco, Springfield, Illinois; St. Louis, Terre Haute, Troy, Washington, Worcester.

Adapted from Barnard's *American Journal of Education*, XIX, 463. 1869.

During the year 1869 Henry Barnard issued a special report upon the curricula of "the principal cities of the United States." In the published digest of the rules and regulations of these cities, extracts are quoted from reports of the thirty cities named in the footnote of Table III.[1] At that time, as this table shows, certain subjects were well established in high schools: mathematics, English, Latin, history, mental philosophy, and many branches of science. Other courses, as evidences of Christianity and natural theology, represent survivals of the dominant interests of an earlier period, while courses such as science of government and physical exercises stand as forerunners of courses which have now become all but universal. Still other courses are subsumed under different titles and in some cases united to form new courses; for example, no less than six of the courses in this table are now introduced to pupils under a single title "general mathematics."

The development of curriculum offerings in the North Central states is summarized in Table IV, which is based upon reports from thirty to forty schools for each period. As the schools whose reports were available are widely scattered and of varying sizes, the practices here reported were judged by Stout, from whose monograph the data were adapted, to be representative.[2] Only the more striking contrasts between the curricula of 1860 and those of 1910 are shown by the modal offerings and ranges of offerings of schools of those two periods. If this table were enlarged to include miscellaneous subjects, there would, of course, be many subjects in only the 1860 column. An analysis of Stout's data shows that great changes have taken place in

[1] This important report is contained in Barnard's *American Journal of Education*, XIX, 417–576. 1869. Pp. 469–576 are devoted entirely to curricula.

[2] Stout, J. E. *The Development of High-School Curricula in the North Central States from 1860 to 1918.* University of Chicago, 1921.

TABLE IV

CONTRAST BETWEEN CURRICULUM OFFERINGS OF 1860–1865 AND THOSE OF 1906–1911 *

(Percentages show the proportions of schools offering each subject; modes and ranges show the number of years in courses.)

SUBJECTS	1860–1865	1906–1911
Mathematics		
Percentage	100	100
Mode	3	4
Range **	1–4	2–5
English		
Percentage	100	100
Mode	2	4
Range	⅓–3⅓	3–4
Science		
Percentage	100	100
Mode	2⅓	4+
Range	2–5	2–7
Social studies		
Percentage	90	100
Mode	1	3
Range	⅓–2	1½–5
Latin		
Percentage	80	98
Mode	3	4
Range	2–4	4
Other languages		
Percentage	90	100
Mode	2+	6
Range	2–13	4–19
Commercial subjects		
Percentage	45	88
Mode	⅓	6
Range	⅓–1	½–10½
Manual arts		
Percentage	0	58
Mode	—	(2) (4)***
Range	—	1–4
Home economics		
Percentage	10	45
Mode	?	2
Range	⅓–⅔	1–4

* Based upon tables in Stout, *op. cit.*
** Range for schools offering.
*** Bi-modal.

all the subjects which are catalogued in Table IV. Mathematics, for example, changed from a subject in which many schools devoted from one term to one year to each of five branches to a subject in which many schools offered from one semester to one and a half years in four of the original branches. The changes in this subject were due chiefly to greater concentration upon algebra and geometry. English was reorganized into a four-year course with increased emphasis upon extending pupils' literary acquaintance. The amounts of both English and science offered were doubled. In science the organization of year courses in physics and chemistry is somewhat analogous to the reorganization of the course in English and was in fact a precursor of still further organization of science into a few long courses. In social studies this period opened with many nondescript courses and closed with several well-systematized year-courses. The amounts of work offered both in classical and modern and foreign languages increased. Save for very slight offerings at the beginning of this period, commercial and practical arts courses sprang into being during these years. By examining still more closely the data contained in Table IV it can be seen that many of the changes just referred to took place after 1890 and that many courses underwent few significant changes between 1860 and 1890. Many of the great changes which took place after 1890 were due to a great inventory of secondary education, a brief exposition of which will be given in the next section.

Beginnings of the great coöperative inventory of secondary education. The periodical invoicing of any human institution is essential for its continuous progress. In invoicing educational institutions, an inventory can be conducted by or with reference to a single school or many schools. If the inventory is conducted by or with reference to many schools,

the application of principles and plans derived from the inquiry is likely to meet fewer theoretical and practical difficulties, and to have wider usefulness than if the inventory is by and for a single school. The great secondary school inventory of the past thirty-six years has been a coöperative attempt to measure the effectiveness of widely varying schools, to place the results before the academic world, and to base workable recommendations upon observed results. The characteristics and outcomes of this continuous, coöperative inventory will be convassed in this section.

The preceding section of this chapter provides a sketch of the development of programs of study during the past century. During that century, many cities systematized their curricula into well-integrated sequences; the program of studies of Worcester in 1845, as shown in Table II, is a sample of such systematization. Not all schools were able, however, to organize their courses as well as Worcester did hers. Besides, great variations occurred among the types of organization of courses effected in well-systematized schools. For example, the programs of Worcester, Cambridge, and Hartford show striking differences in the offerings in certain subjects. Far greater differences in curriculum practices are shown in Table III, which gives a tabular summary of Barnard's report upon thirty schools in 1867; among these differences are those shown by the percentages of important schools which offered English literature, a standard course in Latin, and history. Diversities in practice are still further emphasized in Stout's original data, as the percentages for the offerings in English vary as much in the eighties as in the sixties. Although variations in practice are probably desirable and will continue to exist in different schools, there seem to be valid reasons, theo-

retical and practical, for agreement and standardization among schools upon certain matters. Such standardization has been desired especially by higher institutions to which admission is sought by candidates from many secondary schools.

Out of this urgent need for standardization grew the great inventory. Although many appraisals of secondary education had already been made, the appointment of the Committee of Ten in 1892 marks the beginning of an appraisal which has continued to the present time. This committee was delegated to report "on the general subject of uniformity in school programmes and in requirements for admission to college." [1] This committee, which consisted of six members of collegiate institutions and four members of secondary schools, organized nine subcommittees of ten members each on the following subjects: Latin; Greek; English; modern foreign languages; mathematics; physics, astronomy, and chemistry; natural history (biology, including botany, zoölogy, and physiology); history, civil government, and political economy; and geography (physical geography, geology, and metereology). The following list of questions was adopted as a guide for the discussions of all the subcommittees:

1. In the school course of study extending approximately from six years to eighteen years — a course including the periods of both elementary and secondary instruction — at what age should the subject of the Conference be first introduced?

2. After it is introduced, how many hours a week for how many years should be devoted to it?

3. How many hours a week for how many years should be devoted to it during the last four years of the complete course; that is, during the ordinary high-school period?

[1] *Report of the Committee of Ten on Secondary School Studies.* American Book Company edition, 1894. P. 3.

4. What topics, or parts, of the subject may be reasonably covered during the whole course?

5. What topics, or parts, may best be reserved for the last four years?

6. In what form and to what extent should the subject enter into college requirements for admission? Such questions as the sufficiency of translation at sight as the test of knowledge of a language, or the superiority of a laboratory examination in a scientific subject to a written examination on a text-book, are intended to be suggested under this head by the phrase "in what form?"

7. Should the subject be treated differently for pupils who are going to college, for those who are going to a scientific school, and for those who, presumably, are going to neither?

8. At what stage should this differentiation begin, if any recommended?

9. Can any description be given of the best method of teaching this subject throughout the school course?

10. Can any description be given of the best mode of testing attainments in this subject at college admission examinations?

11. For those cases in which colleges and universities permit a division of the admission examination into a preliminary and final examination, separated by at least a year, can the best limit between the preliminary and final examinations be approximately defined?[1]

In submitting their several reports upon these elementary questions, the subcommittee presented their recommendations for the time allotments of their own subjects. Naturally, the sum of the time allotments exceeded somewhat the possibilities of a four-year course. These recommendations were, therefore, reduced by the general committee and organized into the four curricula as shown in Table V.

Many possible criticisms of this report were anticipated by the committee. In the first place, it was recognized

[1] *Report of the Committee of Ten.* Pp. 6–7.

TABLE

CURRICULA RECOMMENDED BY THE

YEAR	CLASSICAL THREE FOREIGN LANGUAGES (ONE MODERN)	LATIN-SCIENTIFIC TWO FOREIGN LANGUAGES (ONE MODERN)
I	Latin . . . . . 5 p. English . . . . . 4 p. Algebra . . . . . 4 p. History . . . . . 4 p. Physical Geography . . 3 p. Total . . . . . 20 p.	Latin . . . . . 5 p. English . . . . . 4 p. Algebra . . . . . 4 p. History . . . . . 4 p. Physical Geography . . 3 p. Total . . . . . 20 p.
II	Latin . . . . . 5 p. English . . . . . 2 p. * German (or French) begun . . . . . 4 p. Geometry . . . . . 3 p. Physics . . . . . 3 p. History . . . . . 3 p. Total . . . . . 20 p.	Latin . . . . . 5 p. English . . . . . 2 p. German (or French) begun . . . . . 4 p. Geometry . . . . . 3 p. Physics . . . . . 3 p. Botany or Zoölogy . . 3 p. Total . . . . . 20 p.
III	Latin . . . . . 4 p. * Greek . . . . . 5 p. English . . . . . 3 p. German (or French) . . 4 p. Mathematics . . . . 4 p. Algebra . . . 2 Geometry . . 2 Total . . . . . 20 p.	Latin . . . . . 4 p. English . . . . . 3 p. German (or French) . . 4 p. Mathematics . . . . 4 p. Algebra 2; Geometry 2 Astronomy ½ yr. and Meteorology . . . 3 p. History . . . . . 2 p. Total . . . . . 20 p.
IV	Latin . . . . . 4 p. Greek . . . . . 5 p. English . . . . . 2 p. German (or French) . . 3 p. Chemistry . . . . . 3 p. Trigonometry and Higher Algebra . . 3 p. or History Total . . . . . 20 p.	Latin . . . . . 4 p. English . . . . . 4 p. as in Classical additional 2 German (or French) . . 3 p. Chemistry . . . . . 3 p. Trigonometry and Higher Algebra . . . 3 p. or History, Geology or Physiography ½ yr. and Anatomy, Physiology, and Hygiene ½ yr. . . . 3 p. Total . . . . . 20 p.

* In any school in which Greek can be better taught than a modern lan
desirable to teach Greek in an ample way, Greek may be substituted for

MODERN LANGUAGES		ENGLISH		YEAR
TWO FOREIGN LANGUAGES (BOTH MODERN)		ONE FOREIGN LANGUAGE (ANCIENT OR MODERN)		
French (or German) begun	5 p.	Latin, or German, or French	5 p.	
English	4 p.	English	4 p.	
Algebra	4 p.	Algebra	4 p.	I
History	4 p.	History	4 p.	
Physical Geography	3 p.	Physical Geography	3 p.	
Total	20 p.	Total	20 p.	
French (or German)	4 p.	Latin, French, or German	5 or 4 p.	
English	2 p.	English	3 or 4 p.	
German (or French) begun	5 p.	Geometry	3 p.	II
Geometry	3 p.	Physics	3 p.	
Physics	3 p.	History	3 p.	
Botany or Zoölogy	3 p.	Botany or Zoölogy	3 p.	
Total	20 p.	Total	20 p.	
French (or German)	4 p.	Latin, French, or German	4 p.	
English	3 p.	English	5 p. as in others 3; additional 2	
German (or French)	4 p.	Mathematics	4 p. Algebra, 2: Geometry 2	
Mathematics	4 p. Algebra 2; Geometry 2	Astronomy ½ yr. and Meteorology ½ yr.	3 p.	III
History	2 p.	History	4 p. as in the Latin-Scientific.. 2 additional 2	
Astronomy ½ yr. and Meteorology	3 p.			
Total	20 p.	Total	20 p.	
French (or German)	3 p.	Latin, French, or German	4 p.	
English	4 p. as in Classical additional 2	English	4 p. as in Classical additional 2	
German (or French)	4 p.	Chemistry	3 p.	
Chemistry	3 p.	Trigonometry and Higher Algebra	3 p.	
Trigonometry and Higher Algebra	3 p.	History	3 p.	IV
or History, Geology or Physiography ½ yr. and Anatomy, Physiology, and Hygiene ½ yr.	3 p.	Geology or Physiography ½ yr. and Anatomy, Physiography, and Hygiene ½ yr.	3 p.	
Total	20 p.	Total	20 p.	

guage, or in which local public opinion or the history of the school make it German or French in the second year of the Classical program.

that certain subjects, as history and English, suffered serious contraction in the classical curriculum. It was believed also that in the English curriculum the foreign languages were seriously contracted. The defense for this condition was chiefly that four years is a very short period for secondary education; it was argued, however, that the curricula omit all short information courses; that they provide four long sequences in language, science, history, and mathematics; and that they meet almost all college admission requirements. Second, the years for beginning different subjects were defended upon the principle that the final choice of curricula should not be made until after the pupil had been given an opportunity to exhibit his quality and discover his tastes by exploring all the principal fields of knowledge. In conformity with this principle, the subjects of the first two years were made representative and as similar as possible. The order of subjects was defended also by calling attention to heavy elimination of pupils during the first two years; it was held that a representative course of study would be of greatest possible benefit to such pupils. Third, a preference of the committee for the Classical and Latin-scientific curricula, though somewhat dogmatically defended, was clearly stated. Fourth, the omission of music, drawing, and elocution was explained as indicating only that the committee believed that local school authorities should determine the amounts of time to be devoted to these subjects; it was pointed out also that much incidental training could be given certain subjects which are omitted: the hopeful case of drawing was emphasized. Fifth, the lack of flexibility within this program of studies was shown to be only apparent, because, it was said, the experienced teacher would make necessary or desirable transpositions of German and French, the sciences, and the historical subjects.

If one compares the orderly character of the four curricula as recommended by the Committee of Ten with curricula which are summarized in Table IV and are described in greater detail by Stout, one must grant that this report was an important achievement. It appeared at the close of a long period of expansion of subject matter and purposes of schools. It pointed out the way of standardization and added valuable recommendations concerning the improvement of teachers and teaching. Owing to the weight of the influences which led to this document and the merit of the report itself, the work of the Committee of Ten can fairly be called the beginning of the long period of invoicing of secondary schools in America. Directly from the report came plans for the reorganization of programs of studies and, as soon as marked defects were seen in the new plans, still further modifications were prepared. Although the curricula proposed by this committee show unmistakable evidences of college influences and of the supremacy of the defenders of the classical languages, yet the curricula cannot be called traditional or mediæval. It is much nearer the truth to say that these curricula represent the best of nineteenth-century curriculum thinking, and that the suggestions are both scholarly and modern.

Despite the admitted values and merits of this report, it has received the following criticisms: (1) As a result of the strong influence of higher institutions it overemphasized the standard college-preparatory subjects and neglected practical arts of "vocational" curricula (it is possible, of course, that, as far as the particular curricula provided are concerned, this college influence was justifiable and correct); but (2) in spite of an avowed interest in pupils who remain in school for two years or less, no differentiation of work for such pupils was provided; and (3) the differentiation made

for students was in every case in terms of subject matter and not in terms of the interests, needs, or equipment of pupils. All these criticisms should be viewed in the light of what the committee attempted and the general conditions which existed in 1892. It should be clear that the committee had the virtue of logical organization and that systematization was the objective most desired. But these facts suggest to the present-day educator the criticism that the committee was somewhat lacking in its vision of what the secondary school would become. While these criticisms deserve to be recorded, it should be remembered by critics that the American secondary school is still held by able foreign and American observers to be in an experimental stage.[1] The rapid extension of secondary education from 1890 when only 300,000 pupils were enrolled in secondary schools to the present time when nearly 4,000,000 pupils are enrolled has contributed to the disparaging of the formality of curricula proposed by the Committee of Ten.

As a direct result of the standardizing influences of the Committee of Ten in combination with changes in the purposes, administration, and population of secondary schools, the period since 1893 has been one of reorganization. The subject matter of each secondary school department has been reconstructed and new administrative units have been organized. The great coöperative inventory of secondary education during the last three decades and the changes affected by it constitute the general subject matter of the later sections of this book. This subject will be divided into the following topics: educational objectives, the school

[1] Cf. C. H. Judd, "The American Experiment of Free Higher Education." (*School Review*, XXIX, 94–105, February, 1921) and W. J. Osburn, *Foreign Criticism of American Education* (United States Bureau of Education, *Bulletin* 1921, Number 8). A careful reading of the entire report of the Committee of Ten will repay the serious student.

population, teaching conditions, the reconstruction of subject matter, and the administration and program of studies. Critics of education have, however, been so important in educational development and reform that Part II is devoted to a brief account of their work and the problems raised by them.

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(See also parenthetical note at end of Chapter III.)

PART II

CONSTRUCTIVE CRITICISM OF SECONDARY SCHOOL CURRICULA AS A BASIS FOR PROGRESS

CHAPTER VI

CONSTRUCTIVE CRITICISMS OF SECONDARY SCHOOL CURRICULA IN ANCIENT, MEDIÆVAL, AND EARLY MODERN TIMES

Critics and progress. Unlike the well-tempered lover whom every one admires, the critic, though a saint and an inspirer of progress, neither expects nor receives admiration from the crowd whose acts he questions. Indeed, instances of unapplauded critics flood the mind: Anaxagoras, Pericles' teacher, critic of a people who mistook the solar ball of fire for a god; Protagoras, the agnostic in a land of pagan gods; Jonah of Nineveh, critic of a city dying from its own corruption; Jesus the shepherd, a critic who placed life above the letter of the law; Roger Bacon, neither poet nor profligate, but only an alleged bearer of light in a darkened age; Servetus, whose ominous crown of straw, leaves, and sulphur was his award for attempting to separate truth from error; Copernicus, with irreverence for a Ptolemaic universe; Darwin, with his hesitant announcement of a great revolutionizing scientific theory; Rice, discloser of waste in certain formal drills; and Wilson, critic of deadening diplomacy. It is not here maintained that these critics are without followers, but that such critics are seldom popular with the crowd whose thoughts and acts they criticize and whose good they seek. "Change of view in any direction usually causes some pain at first," [1] or as Jebb says, "Popular senti-

[1] Holland, F. M. *The Rise of Intellectual Liberty.* Henry Holt and Company, 1885. P. 401.

ment is universally against new subtleties."[1] Even though constructive critics of secondary-school curricula be the mainspring of a period of progress which stamps their day as a golden age, any temporary unpopularity of such reformers should, therefore, cause no wonder.

Despite repeated assertions that constructive criticism leads to reform and progress, the critic gives little immediate comfort and often finds none in a world which stands in need of the freeing of thought by minds qualified to sift error from truth. Despite the social philosopher's praise of variations in thought as precursors of progress, an uncritical veneration for the solid and enslaving thought and customs of the ages protects ancient darkness against modern light. Why should our race venerate its fetters when open paths lead to light? Why has the critic so little comfort among his own? Why has the student of education been shackled whenever he has projected the clear cold light of criticism upon the school? Certain scholars have much to say of the ills which arise from vested interests in property: what can be said of vested interests of teachers in unprofitable subject matter?

But can we accept the critic as a guide? Is the critic truly a herald of progress? Of late, our country has heard criticisms of pacifism and of war, of divorce and of domestic tranquillity, of Latin and of forge work in schools. Where lies truth when diverse proclaimers base their criticisms upon "scientific data"? Who can distinguish Socrates from the mountebank? What procedure enables us to find out and profit by the sound principles of curriculum construction? Long and difficult though this procedure be, it must be followed if it can be found. For its derivation, one may search in the literature of progress. If it be found that

[1] *Attic Orators*, cxxiii.

constructive criticism has either a necessary or a frequent connection with progress, we shall find in the discovery sufficient grounds for examining carefully the criticisms of curricula.

The value of criticism as shown in the literature of progress. The literature of progress has been reviewed for the purpose of deriving a procedure of dealing with criticisms of the secondary-school curriculum and for the purpose of discovering whether or not the critic carries light to darkened places. Such a review calls attention to striking differences between the types of human activities during different periods of history. At times, as during the political and ecclesiastical tumult of the Middle Ages, there has apparently been much unprofitable activity combined with exceedingly slow progress toward any defensible educational goals. At other times, as during the Renaissance, there has apparently been much profitable activity. Accompanying these two periods were equally different types and amounts of mental stimulation. A review of the works of certain partially suppressed mediævalists shows that their years were barren times for critics. Those centuries were times of extreme intolerance on the part of scholars of any nonconformity to the strict and comprehensive tenets of the major institutions of that period. Outspoken criticism was rare; written criticisms were often burned by or with their authors. The Italian Renaissance was characterized, on the contrary, by great freedom from institutionalized tenets as far as the occupations of scholars were concerned. The lives of Petrarch and Vittorino stand forth as proof that their years were one long open season for critics of mental sterility and joyless schools. Criticisms of academic practices were then freely made by certain scholars, and the reconstructed courses of instruction of the fifteenth century were among the results.

In Chapters I to V is given a detailed discussion of the curricula of different historical periods. It is sufficient to say here that the scholarly constructive critics of the thirteenth and fourteenth centuries appear to have been directly and chiefly responsible for the emergence of the enlightening, humanizing curriculum of the early modern centuries; while the general lack of sympathetic attention to critical thought during the seven preceding centuries was responsible for the attempted suffocation of practically all proposed changes in subject matter taught in secondary schools. The historical survey presented in the foregoing chapters supports the statement that few school practices are of the greatest possible value unless they have been subjected to the unfettered criticisms of the generation in which the practices are found. Periods of intolerance toward criticism are periods of stagnation, while periods of free criticism are likely to be periods of great progress.

The literature of progress enables one to classify much of the activity of the Middle Ages as irrational in the larger sense of the term — as instigated by fundamentally instinctive tendencies rather than by high ethical and social ideals. The activity of the Renaissance was, by contrast, indelibly marked by the social impulse of evangelizing superior minds in the interest of subject matter which possessed high ethical appeals, high literary appeals, and appeals to the so-called rational self. A convincing lesson is taught by these two periods: humanity needs guidance to enable men to avoid unprofitable and harmful activity; criticism should form a part of such guidance.

Criticism varies, however, in quality, and even when apt it is not automatic in producing good. Criticism which is violently opposed to existing conditions has often been overlooked as far as practical results within the lifetime of the

critic are concerned. Such criticism fails to ally itself with current forces even for the purpose of directing them. While this somewhat extreme or Bohemian form of criticism may ultimately lead to progress, it lacks certain leadership values which characterize the criticism of Erasmus, Spencer, or Dewey. That is, to be of greatest value, criticism must be based upon a thorough examination of the past and the present, together with a consideration of the probable tractability of the critic's own generation. Criticism, like legislation, is most effective when directed against practices which are generally recognized as undesirable. The radical critic is often classified as radical only because he has too early become dissatisfied with existing practices and has undertaken prematurely to correct certain evils. The constructive critic, as distinguished from the radical critic, is he who marshals the strong forces of his day against the generally undesired practices. When, for example, Comenius launched his criticism against the badly organized Latin teaching of the seventeenth century, he utilized the contemporary interest in Latin in the improvement of Latin teaching, instead of attempting too early to bring about an abandonment of Latin in favor of the undeveloped vernacular languages of northern Europe. Comenius employed also another device of the successful constructive critic: he made his criticism effective by utilizing established means — the schools — in advancing his criticisms. If Comenius can be accepted as a typical constructive critic, it may be said simply that such a critic is a practical thinker who recognizes both things and people as they are and tactfully directs the people in the acceptance of his criticism.

Before constructive critics of the curriculum can be successfully located and their recommendations accepted, it is necessary to see that they have gone somewhat beyond the

requirements just stipulated as defining constructive criticism. It must be decided, if possible, whether the critics are themselves looking toward progress. In order to arm ourselves for this test, it is necessary to examine the nature of progress. The literature of progress produces no magical formula for testing progress. Instead, the concept of progress must be set up and then the directions of any activity or critical thought, whether progressive or decadent, must be measured by that concept: "Progress is evolution measured by an assumed standard of human values." [1] Or, as another student of progress says, "Progress is better adaptation to given conditions. Change may be adaptations — at first, perhaps, very imperfect — to new conditions." [2] If, therefore, change be wisely directed, progress is most likely to follow. "An age of progressive thought demands a fearless search for truth unhampered by dogma or class prejudice or organized hindrance. . . . Humanity can move forward only as it generates imagination, moral imagination, clarified by untrammeled critical thought, daring imagination, based upon fact and enlarged by scientific faith. Only when the majority of the members of a social group are provided with the means of finding out truth for themselves and actually develop the capacity for constructive thought can we hope to realize the noble vision of the idealists." [3] This author closes his extended survey of the literature of progress by saying that progress, as nearly as it can now be described, "is the identification of personal interest with social interest to an increasing degree." [4] A constructive critic is, therefore, one who adds to his practi-

[1] Todd, A. J. *Theories of Social Progress.* The Macmillan Company, 1918. Pp. 94–95.
[2] Ross, E. A. *The Foundations of Sociology.* The Macmillan Company, 1905. P. 125.
[3] Todd, *op. cit.*, pp. 486–487. [4] *Ibid.*, p. 547.

cality a clear vision of personal and social needs as revealed during a high-minded, moral, and scientific approach to contemporary problems. Just what will be the critic's point of view upon specific problems depends upon his personal philosophy of life. If, however, he is practical, intellectually honest, moral, and scientific, his criticisms are the best available suggestions toward progress.

It is believed that the foregoing discussions of the relation between criticism and progress, together with the important fact that critics are among the best sources of curricula problems, justify an approach to curricula by way of the critics. As there are two sides to every question, conservative as well as progressive critics must be heard in any complete discussion of secondary education. For two reasons, first place will be given to critics who represent mainly progressive tendencies: (1) the progressives provide targets for the conservatives; and (2) problems can most readily be found in the literature of the progressive critics. The remainder of Part II will, consequently, be devoted to the critics, their opponents (the conservatives), and the problems raised by the critics.

Criticism of secondary education is no new adventure. 1. *Reasons for criticism.* Why should anyone criticize an institution whose officers are continuously devoting their services to the welfare and improvement of mankind? How can one be as ungrateful as to look with disfavor upon the well-meant activities of the school curriculum? Three general reasons for such criticism may be cited in advance of the criticisms themselves: first, secondary education is a vital institution in any time or place and it must, therefore, be as nearly correct as possible; second, since secondary education is vital, it must change as times change; third, men have special interests, fears, aversions, and attitudes and

some observers are certain to stand aghast at that which pleases others.

2. *The beginnings of criticisms are unrecorded.* Unfavorable comments upon the training of youth must have been made during the time which intervened between the primitive ancestors of the Greeks and the Greeks themselves. At some time a man, probably a young man, took issue with the elders about the initiation ceremonies for boys, or about a primitive lecturer's views on some other educational matter, or possibly the young man crossed over the mountains which separated his tribe from another and learned the folly of his tribe's taboos. At some time the complexity of the customs which prevailed in the primitive valley of ignorance was exchanged for a complexity in which reason had a larger place than that accorded it by primitive man. Whatever the earliest experiences with criticism may have been, it is certain from our knowledge of primitive man that no one without a heavy purpose undertook to leave the trodden path.

The criticisms which are reviewed in the succeeding pages are cited as outstanding examples of the reactions of intelligent men to the subject matter studied in secondary schools. As schools often fail to realize the highest purposes of contemporary society, one may look for criticism and advancement in any intelligent and progressive age. The forthcoming criticisms are here presented for three definite purposes. First, these criticisms have for the most part actuated educators to better curriculum practices. Second, these criticisms have in most cases been acted upon by leaders whose régimes still stand for progress — in many cases, however, a century or more elapsed between the announcement of the criticism and any action upon it. Third, these criticisms have been so intimately bound to periods of

advancement, and the technique of dealing with these criticisms has so fully characterized educational reforms, as to prove that no educator can afford to neglect the technique of dealing with criticisms unless he desires to have his school rot as have the schools of countless, forgotten pedagogues whose stupidity has damned humanity ever since the first self-satisfied old man turned teacher.

3. *Early Greek critics and the curriculum.* As far as historical records show, the Greeks were the first people who drove out complacency by frequent, repeated, and well-directed attacks upon beliefs and customs. Thales, for example, found that his people failed in important crises because of the effects of superstition-laden courses of study. As a case in point, the Greeks, having failed in an attack upon Syracuse, were preparing to save themselves by a retreat; the retreat was intercepted, however, by an eclipse which, declared the prophets, indicated the wrath of Diana who could be placated only by twenty-seven days of peace. While the Greeks, ignoring the plain teaching of science, maintained this peace, their enemies continued their activity so vigorously that all the Greeks were either massacred or sold into slavery. Two generations later, in 364 B.C., a similar defeat was suffered by the Thebans, because Pelopidas was unable to convince his men that eclipses have nothing to do with the relations between men and their divinities. This persistence of primitive lore among the populace after the advent of science to scholars illustrates two important matters: first, advances in knowledge are frequently thwarted by the ignorance of the masses; and second, the best thought of a given period may still be unknown to the smug, "practical" man hundreds of years later. Had Anaxagoras been able to direct the training of as many pupils as are now enrolled in the schools of any large

American city, he might have opened to at least one hundred leaders what he showed to four of his great pupils — Euripides, Thucydides, Aspasia, and Pericles. But these early critics confined their attacks to subject matter, instead of including the administration of schools among their targets — their fields of operation were restricted by ineffective machinery.

4. *Protagoras.* A critic who advanced the technique of criticism itself was Protagoras. This critic extended the scope and the rights of thinkers by asserting that man is the measure of all things. By developing this notion as a teacher, Protagoras, who was also a tutor of Pericles, was able to lay the foundations for a philosophy which was certain to undermine all edifices based on superstition and fear. It is easy to see, however, that any nation whose science is believed to have emanated from the gods must have difficulty in accepting this principle of criticism. It is quite in keeping with primitive survivals among the Greeks that Protagoras, like Anaxagoras, was banished and that Socrates, who practiced the same theory of measurement, was given a potent glass of hemlock. As the direct line of advancement of thought and understanding proceeds through these free-thinkers, it is evident that their criticisms were milestones in the path of progress. The direct effects upon the curriculum are two. In the first place, these sophists laid bare certain superstitions of their day and substituted for ignorance their rational beginnings in science. That certain sophists committed errors and that they were at times guilty of using very large measures in measuring their own fees is shown by recorded evidences, but such mistakes as these were simply the errors that all men make when they leave a well-marked road. These men have to their credit, in the second place, the fact that they stimulated

such men as Isocrates to take a sober view of life and also to be discontented with things as they were.

5. *Isocrates.* It was Isocrates who saw beyond the horizon of earlier critics and heralded a new view of criticism. He saw that the critic himself is not beyond the pale of criticism and that the advances made by the critic are open to still further correction and modification. By alleging that the sophists disregarded truth and that they professed knowledge of which they were ignorant, he also chastened those teachers who attempted advances for which science had not yet prepared them. As a constructive critic, Isocrates asserted that a youth should seek teachers who knew how to compose orations, who knew how to practice oratory, and who in all their teaching were no less perfect than the youth whom they essayed to teach.

6. *Socrates.* By individual analysis, Socrates, an older contemporary of Isocrates, showed his pupils — or listeners — how to strike below the veneer of opinions which blinded truth-seekers to real knowledge. Unfortunately for Socrates, although fortunately it may be for later generations, he was unprepared to reconstruct a program or body of knowledge for the persons whose veneer he pierced. Although he held that virtue was based upon convincing and energizing knowledge, he could recommend no general body of knowledge to supersede the error and opinion which he disrupted. So far, Socrates was, according to Plato, a destructive critic. He showed how to teach and, in part at least, what should not be taught. He was perhaps in the position of one who is well grounded in the art of teaching, but is deficient in subject matter for instruction. An immense service would have been performed by Socrates even had he gone no further. He had cleared away blinding defense mechanisms and he had helped his pupils to see problems. But

a real difficulty lay in the fact that many of his pupils were unable or unwilling to solve their problems — only an adventurer willingly travels an unmarked road. It appears, however, from the account of another of Socrates' pupils, Xenophon, that it was the hope of Socrates to preserve the good elements of conservatism as they were found in morals and religion. Xenophon makes Socrates appear as a guide who would apply a pragmatic test to ideas and practices to discover the good. Lacking the well-organized objectives which typify the logical scholar, Socrates was unable to reconstruct a system of thought which might have enabled him to attain his two ideals of social stability and a searching individual freedom.

7. *Plato.* To Plato, and then to his pupil, Aristotle, fell the task of further constructive criticism. Plato's criticisms of education can be understood only as a part of his general philosophy. His problem was that of finding out how men can live best. This problem drove him, in turn, to that of discovering the nature of the soul or the living principle of man. The soul is, he found, a tripartite being characterized by a desire for satisfaction — its appetitive nature, by self-assertiveness, and by receptivity. As these three elements are not by nature in proper quantities or proportions in the soul, education is needed in order to bring them into correct coördination and to develop or weaken specific tendencies according to one's nature. Education thus became avowedly a process of soul-culture. Formal disciplining of the powers or characteristics was recommended by means of the right amounts of subject matter. Upon this basis which provides for individualized instruction, Plato outlined a course of study which would, he believed, develop justice, right, and virtue.

Whatever entered Plato's proposed curriculum had to

meet the requirements of his general philosophy of life for specific virtues require specific training. Music and literature were valued because they soften and refine the emotions as gymnastics refines, steadies, and directs physical activities. Each passage selected for the literature course was to be employed because it expressed ethical sentiments and could therefore help to form the desired character in the developing child. Heroic examples of high living were to be taught to the child. This principle of selection led Plato to reject many questionable Greek stories of gods and men and also to reject false and superficial views of life as represented by certain poets. As religion, myth, and history were badly interwoven in Plato's time, he had the task of formulating criteria by which to organize religious and historical materials for instructional purposes. These criteria were based upon the following moral qualities: filial respect, good-will toward fellow-citizens, courage or manliness, truthfulness, and self-control. With these standards as bases for judging literature, the old story of the treatment of Cronos by his son Zeus became a hateful and demoralizing falsehood which had to be banished, accounts of quarrels among the gods were dismissed because they could never be used in teaching good-will, and ghostly stories of Hades were cast out because they could not be used to inculcate manliness and courage. Truth could be taught only by telling "what is" and avoiding "the thing that is not." Self-control was to be taught by practice in obedience and self-restraint. As the needs of society were shown by these criteria, it became the duty of the masters of language and literature to select suitable subjects from the lives of great and heroic men and give suitable expression to them.

In addition to the disciplines already enumerated, Plato advocated as much of mathematics and science as each

child's nature could be induced to undertake, although he held that "the acquisition of knowledge ought not to be made a slavery to any free man." As often stated, Plato held that no pupil was ready for the higher training which he offered until the youth's mind had been whetted by geometry. Finally, the ablest pupils were to be selected for still further training in philosophy, mathematics, and science, beyond the age of twenty. In the pursuit of these studies intellectual progress rather than the rule-of-thumb achievements of Babylonians and Egyptians was the objective. Intellectual progress comes, Plato believed, only by a mastery of ideas, that is, the ultimate forms of things — universal modes. Consequently, the study of geometry must not be for the purpose of learning how to measure land as crude Egyptians might practice mensuration, but instead for the purpose of acquiring a universal mode of thinking. This theoretical training is not of course to be given to the soldier or builder, but to the statesman — the philosopher who is to be a king in Plato's ideal state; the pursuit of these studies is to equip men for thinking. It should be noted that this training to think — Plato's formal discipline — is based upon a system of philosophy which must have approached closely to reality in his own thoughts about it. The training may be described by saying that any universal truth was by definition capable of giving form to shapeless substance. If, therefore, a student mastered any idea or universal he had by the adoption of the idea or universal increased his ability to subsume not only many particulars but also substance in general.[1]

[1] For a detailed account of Plato's educational theories, see, first, his *Republic:* second, R. L. Nettleship's *The Theory of Education in the Republic of Plato* (University of Chicago, 1906); and, third, additional dialogues of Plato. It is quite impossible to give an adequate account of Plato in a brief sketch.

Plato has been accused of misleading or subjugating the world for a thousand years or more after his day, but there are several matters which quite exonerate Plato of this crime. In the first place, it may properly be admitted that Plato did invent a very comprehensive and elaborate scheme for education and philosophy. Then, as a part of this scheme he must be commended for having made the most thorough and logical review of the needs of the young and the materials of instruction that had ever been recorded. In the second place, he chastened educators who used, for ethical training, literary materials of a sort which no critic of Plato can defend. It is significant that in the matters which Plato treated thus — moral and religious instructional materials — American educators have only within the last decade advanced to the position taken by Plato. In the third place, even though Plato took high ground, there is no valid reason for accepting his conclusions without a retesting of them. This point, in the technique of dealing with critics, is one which may be applied again to Aristotle and also to more recent critics. That is, if one critic makes an important advance, there is no valid excuse for centuries of complacent acceptance of his position or belief or scheme of things. The critic's procedure must first be used by himself and then in turn used by men who live afterward in making still greater advances. The only reason why a critic is sometimes ten centuries instead of only ten years ahead of his time is that he is succeeded by sterile, docile fellows who find tradition easier than thought! One should always practice Butler's suggestion in regard to the technique of dealing with critics: "Books (of critics) should be tried by a judge and jury as though they were crimes, and counsel should be heard on both sides." [1]

[1] *The Note-Book of Samuel Butler.* Fifield, 1913. P. 107.

8. *Aristotle.* Aristotle's criticism of life and education was developed from his views upon three grades or levels of living. One type of life is, according to Aristotle, the life of enjoyment — that of the vulgar man who seeks mere happiness; another type is the complacently good life — the life of the politically honorable man who may be, despite his honor, good for nothing in particular; and, finally, there is the speculative type of life — the life of the philosopher whose mental activity is conducted in accordance with that form of goodness which is the best and most complete. The criticisms which lie in this classification of types of life were aimed at the merely practical man who may be either immoral or nonmoral, of little or no value to the state, and lacking in rationality and justice. To the extent that the artisan's work, which can only increase man's comfort, causes bodily deterioration and requires attention to physical matters, such work prevents the artisan from leading a life of excellence and is therefore illiberal. To the extent that the philosopher's speculation, which can make a rationalizing man more rational, determines the highest good, such speculation is ennobling and liberal. The practical life of the artisan deals with the passing, the changing, the inconsequential; the speculative life of the philosopher deals with the permanent, the self-sufficing, the universal. While there must be "business for the sake of leisure, things useful and necessary for the sake of things honorable,"[1] one should subordinate the mechanical or illiberal to the speculative or liberal; that is, the single and passing experiences of life should be coördinated in such a way as to enable the thinker to bring them under a universal principle. Experience with things — sensory experience — is permanently valuable only insofar as it is so coördinated. Unfortunately, Greek

[1] *Politics*, VII, 14.

society was so organized as to provide little incentive for the improvement of manual activities, and Aristotle refrained from showing how the menial work of the artisan can be liberalized and made rational by science. Instead, he advocated universal education partially as a selective device for separating those who can perform only the common tasks of life from those who can be fitted for rational living. Common tasks are, he asserted, like the striving of politically honorable men because both are dependent upon fortunate circumstances rather than upon rational plans. Both are opportunistic, illiberal, and nonprogressive. Therefore, since opportunism is unprogressive and only begets more opportunism, so irrational living should be minimized or eliminated; since, however, speculative activity, as can be shown in an analogous way, rationalizes life, gives meaning to experience, reduces error, and provides a guide to thought, so rational living should be encouraged and increased. Directly from this reasoning comes the conclusion that rationalized experience is a guide to life. One should, therefore, study that which has been rationalized and then advance by rationalizing the new or uncoördinated. Here lies the basis for the studies, *mathemata*, as distinguished from arts such as cookery, mensuration, professional athletics, and cheap oratory. The studies might be based upon observation, as indeed Aristotle the biologist advocated, but the purpose of the observation must be that of rationalizing life. In somewhat more modern phraseology, this portion of Aristotle's criticisms of life as presented in the *Ethics* and the *Politics* advocated an indirect and rational approach to the problems of living instead of a direct and opportunistic approach. Still further translated into academic terms, this view favored foundational studies composed of practice and sound theory instead of immediately useful studies composed

entirely of practice. Although Aristotle never completed the program which he began in the *Politics*, it is perfectly clear that this consistent logician was a precursor of the modern schoolman who tries (1) to develop a social conscience in pupils by providing various social activities and later coördinates the results of these experiences by means of a systematic treatment of civics; (2) to develop a knowledge of agriculture by providing first-hand experience with things agricultural — soils, animals, and plants — and later coördinates the results of these experiences by means of a systematic treatment of biology; or (3) to develop a knowledge of "business" English by means of projects which involve business situations and later coördinates the results of the projects by means of a thoroughly systematized course in English in general. He was clearly a nonbeliever in "short, practical" courses and was also a nonbeliever in purely theoretical training.[1]

9. *Present-day values of Greek criticisms.* Each of these early adventurers in educational criticism, Thales, Anaxagoras, Protagoras, Socrates, Isocrates, Plato, and Aristotle, based his criticisms upon such reasons as those stated previously: the vital importance of adolescent training, the need for conformity of education with changing times, and the recognition of individual differences. Their criticisms as they affect the curriculum are in number: (1) In the interest of the state, universal education must be provided according to the nature and station of the learners. (2) The judgment of enlightened man is superior to traditions, superstitions, and myths. (3) Science, if systematized, can overcome certain fears that interfere with progress. (4)

[1] Cf. his statement, "Now it is clear that in education practice must be used before theory, and the body trained before the mind." (*Politics*, VIII, 3, Jowett's translations, 1338 b.5). On this point cf. also John Burnet's *Aristotle on Education*, Cambridge University Press, 1905. Pp. 1–11.

Opinion must be examined and where incorrect it must be superseded by science. (5) Activities which are pursued without a view to rationality are illiberal and degrading. (6) The pursuit of systematic studies is elevating morally, spiritually, and intellectually. (7) Education must be planned in the light of a rationalized view of needs and aims — comprehensive, liberal values of the serious student are preferable to narrow illiberal values of the shallow, practical worker. (8) Curricula should be so ordered that the succeeding years leave behind the fragmentary work of children and assume a systematic and rational character. While it is not here maintained that an early acceptance of the criticisms of the Greeks would have solved educational problems centuries ago, it is maintained that a critical study and acceptance of certain of these criticisms would, even to-day, improve the curriculum thinking of the great mass of teachers and principals who guide the training of American boys and girls.

Criticism during the Middle Ages. Although there were differences of opinion during the Middle Ages, few, if any, of these differences assumed the form of free criticism such as that developed by the Greeks. Some of these differences of opinions took the form of literary and philosophical attacks upon superstition. The critics of superstition were apparently aware of inconsistencies among beliefs, but they were unable to extricate either their contemporaries or themselves. As Thorndike says of certain Roman skeptics, mediæval critics also, when they attempted to avoid traditional superstitions, ended by plunging themselves into others almost equally enslaving.[1] Near the close of the mediæval era, the established church and state entertained

[1] Cf. Lynn Thorndike's chapter on this point: *History of Magic and Experimental Science, I,* Chapter IX. This discussion of criticism during the Middle Ages is based largely upon Thorndike's work.

many notions contracted from the Arabs and through them from the Greeks. These notions served a double purpose: they increased criticism and, by their soundness, they clarified thought. The power of institutional censorship is shown, however, in the works of Adelard of Bath (d. 1142). Adelard did a considerable amount of original and advanced thinking, but he attempted to avoid adverse criticism by attributing certain modern discoveries to writers of earlier times.[1] Adelard, in pleading for reason and for experimental science, accused many writers of the past of being "captivated by the appearance of authority" and being led about "by a halter." With regard to himself, however, he announced, "if you want to hear anything more from me, give and take reason." [2] Criticism of contemporary educational practices, if present in the work of Adelard, was, however, cautiously guarded, as it was also in the writings of his young contemporary, the scholarly John of Salisbury (d. 1180).

Criticism of venerable authorities grew during the following century, particularly under the leadership of Robert of Grosseteste (d. 1153). "Even Aristotle does not escape criticism. We are told that we should not accept his statement concerning the number of movers of the heavenly spheres, for, as Avicenna and Rabbi Moses have pointed out, the science of astronomy was little developed in his time. Nor are the Arabian commentators upon Aristotle left uncensured."[3] Robert's famous pupil, Roger Bacon (d. *c.* 1292), although a mediævalist in much of his thinking and writing, has the credit of launching more criticisms against the learning of his times than did any of his contemporaries. Several of his criticisms were neither unique nor sound. Temporarily encouraged by the Pope, Bacon made four

[1] Thorndike, *op. cit.*, II, p. 25. [2] *Ibid.*, II, p. 29. [3] *Ibid.*, II, p. 450.

vital criticisms. First, he alleged that the state of learning was higher in the days of his youth than forty years later, but Thorndike shows that Bacon was unacquainted with the most advanced learning of his day and could have referred to only two countries — France and England, and two universities — Oxford and Paris. As a part of this criticism, Bacon included the tendency of many of his brethren to rush into theology without having adequate preparation in "the common sciences, such as Latin, grammar, logic, and a part of natural philosophy, and a little metaphysics." [1] Second, he complained of the waste of time in teaching only the elements of certain subjects. He believed that he could teach more useful geometry in a fortnight than the young friars did in ten or twenty years; "'the ordinary mathematician does not consider that he knows anything unless he demonstrates it, and so he takes from thirty to forty years' to master the subject, and that the 'text-books and the teachers of mathematics delight in multiplying conclusions to such an extent that one has to give years of unnecessary time to extracting the essentials,' and 'this is one reason why there are so few students of a science which is a prerequisite to all knowledge.'" [2] Third, while overlooking the work of the eminent astrologer Bonatti and the scholarly student of optics, Witelo, Bacon deplored the contemporary lack of interest in science. In a similar omission, he overlooked half a dozen diligent experimental scientists such as Albertus Magnus and Bartholomew of England, the encyclopedist. These criticisms of science slighted the best work of his day. Fourth, Bacon repeats the criticism announced by Adelard and a hundred years later by Grosseteste in regard to

[1] *Ibid.*, II, p. 640.
[2] *Ibid.*, II, pp. 641–642. The quotations from Bacon are D. E. Smith's translations of Bacon's *Communia Mathematica.*

authority and experimental science. As a criterion of truth, "'all sciences except this either merely employ arguments to prove their conclusions, like the purely speculative sciences, or have universal and imperfect experiences'; while 'It alone, in truth, has the means of finding out to perfection what can be done by nature, what by the industry of art, what by fraud'; for it alone can distinguish what is true from what is false in 'incantations, conjurations, invocations, deprecations, and sacrifices.'" [1] The frequent repetition of criticisms such as these by the greatest scholars of their centuries enabled Adelard, Aquinas, Grosseteste, Albertus Magnus, and Bacon to make an impress upon tradition-bound mediævalism. All these reformers were men of their times, yet all looked at least a short distance beyond their times: Adelard, Albertus, Grosseteste, and Bacon saw the approach of experimental science, or rather its growth from the works of their own day; Aquinas (d. 1274) saw an approaching tolerance of scientific research — "Christians who deny as contrary to their faith the philosophical solutions of problems which are really indifferent so far as the faith is concerned, simply bring Christianity, in Aquinas' opinion, into disrepute among the wise men of the world." [2]

Although criticism is not the sole cause of progress, the comment of the scholars named in this section can be credited with much of the impetus given to learning in their own centuries and those which immediately followed. Science itself is by definition critical. Likewise, whatever aids science aids criticism. The Arabian works translated by Gerard of Cremona, the scientific researches of Albert the Great, and the outspoken criticisms of Roger Bacon

[1] *Ibid.*, II, p. 652. The quotations from Bacon are from his *Opus Minus* and *Opus Majus*.
[2] *Ibid.*, II, p. 600. This author cites a similar opinion expressed by St. Augustine.

united in producing the greatest science of the sixteenth and seventeenth centuries.

Early modern critics. The men of mediæval Europe — Adelard, Grosseteste, Albert, Bacon — would have lived in vain had not their union of curiosity and criticism brought forth a progeny of early modern critics. To these later critics fell the task of furthering progress by continued thought and criticism. All the mediæval forts — tradition, authority, superstition, and fear — were still well fortified by three commanders or knights of intolerance. For early modern intolerance was, like ancient Gaul, "divided into three parts: the intolerance of laziness, the intolerance of ignorance, and the intolerance of self-interest." [1]

1. *Petrarch.* It was the function of the "first modern scholar," Petrarch (1304–1374), to rescue classical literature from inaccurate, technical grammarians. His devotion to the classics and his lack of interest in science led him, however, to overlook the value of knowing the facts of science. "Even if all these things (facts of science) were true, they help in no way toward a happy life, for what does it advantage us to be familiar with the nature of animals, birds, fishes, and reptiles, while we are ignorant of the nature of the race of man to which we belong?" [2] By this passage Petrarch eliminates science from his problems of life as he eliminates his vernacular by the following comment on the popularization of literature: "I can only give voice to my irritation, when I hear the common herd befouling with their stupid mouths the noble beauty of his (Dante's Italian) lines." [3] It was partly to avoid this "befouling" of literature and partly because of his complete engrossment in

[1] Van Loon, Hendrik. *Tolerance.* Boni and Liveright, 1925. P. 146.
[2] Robinson, J. H. and Rolfe, H. W. *Petrarch, the First Modern Scholar and Man of Letters.* G. P. Putnam's Sons. Sec. ed., 1914. Pp. 41–42.
[3] *Ibid.*, p. 185

Latin that Petrarch early abandoned the Italian language in his fine writing. Of scarcely less importance for the renascence of the classical spirit was Petrarch's criticism of academic dialectics or logic. Of this subject, he said that the dialecticians "waste their whole lives" in contentions. Such persons, he continued, think that because a road is proper to traverse, it immediately follows that we should linger on it forever. But he himself held instead that, "Dialectics may form a portion of our road, but certainly not its end: it belongs to the morning of life, not to its evening." [1] This devout churchman criticized also the narrowness of those scholars who could not remain in the church and at the same time enjoy the beauty and strength of the classics.

These four criticisms — of devotion to science, of using the vernacular in literary works, of wasting time at dialectics, and of narrowness in religion were, except for the aversion to science, requisite for literary progress. For literary progress seems in the fourteenth century to have required a return to the path which had been trodden by the ancients and lost by the mediævalists as an aid to men in finding this path; it was probably fortunate that a great leader should exhibit both engrossment in and single-mindedness toward the classics. It was unfortunate that science had no equally influential servant. The retarding effect of the Renaissance upon science seems in no small part to have been due to a continued blindness to the fact that scientific as well as literary pursuits can purify and ennoble man.

2. *Valla.* A form of criticism which was neglected during the Middle Ages was advanced by Valla (1407–1457), one of Vittorino's pupils and styled the founder of critical scholarship. Besides criticizing the inaccurate texts of his

[1] *Ibid.*, p. 222.

day, Valla valiantly continued the age-long battle of reason *versus* authority. The second criticism — that of following authority — is here mentioned to show the continued realization of the need for such a comment. The former criticism aided education by leading directly to a revision of textbooks.[1]

3. *Erasmus.* Three fundamental criticisms of the subject matter of his times were made by Erasmus (1466–1536). All three were made also by his less notable contemporaries. The first criticism dealt with a problem which existed before the days of written history and continues to the present time. The scholarly treatment which Erasmus gave to this matter is pertinent to present-day difficulties. This criticism concerns the relation between secular learning and religion. As already shown, the issue had arisen in disputes about the most nonreligious matters, such as arithmetic, as well as in subjects like philosophy which are closely related to theology. In the time of Erasmus this problem took form in this question: Can the Christian safely study the classics? In view of the fact that certain admirers of the classics went to the extreme of applying pagan nomenclature to the persons of the Trinity, a defense and criticisms were demanded. Erasmus was singularly well prepared for rendering authoritative criticisms of the view suggested by the question. He had tasted the simple faith of the Christian and had been charmed by the beauty of Greek literature. He had arrived at the full maturity of a man of well-balanced judgment when the issue confronted him. He was a faithful churchman and also a classical scholar of international repute. Erasmus replied to the question, first, that the Scriptures did not

[1] Woodward, W. H. *Vittorino da Feltre and other Humanist Educators.* Cambridge University Press, 1897. P. 86. Also see Foster Watson's *Erasmus Concerning the Aims and Methods of Education,* Cambridge University Press, 1904. P. 104.

and were not intended to give a complete account of the experience and wisdom which any generation may need.[1] He agreed with Melanchthon that the question, instead of implying an antagonism between Christianity and the classics, should be so phrased as to ask how the Christian could advance spiritually and morally as well as intellectually without the classics. The reply to this question would have been that such an advance was impossible. Next, therefore, he pointed out the dependence of Christian scholars upon Greek and Roman thought for an understanding of the *New Testament* and the writings of the early Fathers. Third, he showed that many early Fathers were classicists and were not contaminated by evil. Finally, he showed the moral value of carefully selected classical works.

A second fundamental issue with which Erasmus grappled was Ciceronianism. This issue had arisen among the pedantic satellites of Petrarch, Vittorino, and Valla. Indeed, Valla was in part, though innocently, the cause of this decadent humanism because his literary criticism had incited scholars to the attainment of a perfect classical Latin style of writing and speaking. Cicero was accepted as the touchstone of purity. Formalism developed so that certain scholars dared not speak lest they use words or forms which Cicero had never used. This stylistic degeneracy drew from Erasmus a satire entitled *Ciceronianus*. This satire tells of one Nosoponus who was once hale and happy. By continued craving for Ciceronian purity of diction, Nosoponus broke his health and became downcast. His Ciceronian labors had, however, included the spending of seven years with never a line of any writer save Cicero; never was a portrait of anyone else allowed to take his mind from his noble exemplar. His dreams, like his waking

[1] *Tusculans*, Preface.

moments, were given wholly to the Roman stylist. He compiled from Cicero three ponderous lexicons: the first was the complete Ciceronian vocabulary with comments on usage; the second was a phrase book with all of Cicero's figures of speech; the third contained all the examples of metrical expression in Cicero. By following these lexicons in another seven years of "imitation" of Cicero, Nosoponus became so facile that he could complete a Ciceronian sentence in a single night! By holding up this picture of Nosoponus to ridicule, Erasmus soundly chastened the pseudo-scholars of his day for their lack of appreciation of virility of expression and of the content of the classics.

Third, Erasmus criticized the incorrect Latin grammars and methods of teaching grammar in his day. As an example of accuracy he praised the Latinity of Valla and the grammar of Valla's friend, Perotti.[1] On teaching grammar, Erasmus censured teachers for their pedantry:

> But I must make my conviction clear that, whilst a knowledge of the rules of accidence and syntax is most necessary to every student, still they should be as few, as simple, and as carefully framed as possible. I have no patience with the stupidity of the average teacher of grammar who wastes precious years in hammering rules into children's heads. For it is not by learning rules that we acquire the power of speaking a language, but by daily intercourse with those accustomed to express themselves with exactness and refinement, and by the copious reading of the best authors.[2]

That Erasmus avoided the error of believing that grammar could be acquired entirely incidentally is indicated in other passages in the discourse from which the above quotation was taken. He does, however, make clear that the purpose

[1] Also a pupil of Vittorino.

[2] *De Ratione Studii*, 522A. Here quoted from W. H. Woodward's translation, *op. cit.*, pp. 163–164.

of study is not simply the mastery of grammar; the student even in the beginning of his studies should attend to the content of what is read.[1] The emphasis with which Erasmus discussed this matter indicates that many of his contemporaries, like many present-day classicists, failed to distinguish between language study and literature study and that they, like their pedantic descendants, seldom taught literature at all.

4. *Rabelais.* Although the waste of children's time and energy upon useless disputations and rules of grammar was ably treated by Erasmus and his contemporary More,[2] still another contemporary, Rabelais (c. 1483–1553), added a satire which should have put an end to pedantry. In this interesting account of the "Lives, Heroick Deeds, and Sayings of Gargantua and his sonne Pantagruel," Rabelais records that Gargantua was carefully trained for "thirteen years, six months, and two weeks" in Latin grammar. Thereafter he spent about nineteen years studying the commentaries of pedants upon the classics, and then sixteen years and two months in finding out "the age of the moon, the seasons of the year, and the tides of the sea," and then his preceptor died! As Gargantua's education was still incomplete, "he got an old coughing fellow to teach him" still other "meally stuff, by reading whereof he became as wise as any weever since baked in an oven." Later, Gargantua forsook this old "muzzled dolt" and went to Ponocrates, who, after purging him thoroughly of all that he had already learned, began a systematic, economical, and beneficial course of study wherein Gargantua speedily mastered all the liberal arts of his day.[3]

[1] *Ibid.*, p. 164.
[2] *Utopia*, J. C. Collins' edition. Clarendon Press, 1904. P. 82.
[3] *Gargantua*, Chapter XIV.

5. *Ramus.* Peter Ramus (1515–1572), who is remembered chiefly for his opposition to Aristotelianism and scholastic dialectics, entered his professional career as a curriculum reconstructionist immediately after having successfully defended as his master's thesis the statement that, "All that Aristotle has said is false." Upon the basis of three fundamental principles, which were products of his critical attitude, he attempted to reconstruct language studies, mathematics, and science. These principles were, that the reconstruction should be based, first, upon the results of the observation of nature; second, upon an adequate system; and third, upon practical considerations or use. By "system," following the discredited Aristotle, he signified: (1) the law of justice — that every principle must be true in all cases; (2) the law of fitness — that every item must be relevant to the given subject; and (3) the law of wisdom — that all which applies to an entire subject should be stated once and for all at the outset. By applying these principles of criticism to instructional materials, his works gained the attention of Descartes, Roger Ascham, John Milton, and Francis Bacon. Few critics have had as important an influence throughout Western Europe as Ramus.[1]

6. *Francis Bacon.* Early modern times produced no more valuable critic of learning than Francis Bacon (1561–1626). Whatever may have been Bacon's defects in experimental science, he formulated the most thorough criticism of learning that had ever been made, if, indeed, it has yet been excelled. The purpose of these criticisms was to find out "that which is good and sound, and to deliver that from the aspersion of the other." [2] The "phantoms," "peccant

[1] Cf. F. P. Graves, *Peter Ramus and the Educational Reformation of the Sixteenth Century.* The Macmillan Company, 1912.

[2] *Advancement of Learning,* IV, 1. W. A. Wright's translation. Clarendon Press, 1880.

humours," and "diseases" of learning which affect secondary-school curricula will be discussed in the following paragraphs.

First, there are three diseases of learning. One of these, Ciceronianism, is treated from the point of view of Erasmus. The second is fruitless learning — the learning of novel, subtle, or obsolete matter. This disease attacks both method and content. As applied to present-day content, it can be illustrated by much of the matter which has already been eliminated from histories and algebras. The third disease is "delight in deceiving and aptness to be deceived." In Bacon's time as in ours this disease can be illustrated by courses in the social and biological sciences.

Second, there are eleven peccant humours of learning: (1) the uncritical veneration of either antiquity or novelty; (2) the distrust of new discoveries; (3) the belief that all possible opinions have been thoroughly tested and that only the best have prevailed; (4) premature reduction of knowledge to arts and methods and a consequent stereotyping of wrong beliefs as already cited among primitive peoples; (5) neglect of universalizing the knowledge drawn from particulars — the principle already cited from Aristotle; (6) too great a reverence for speculation combined with a neglect of observations and experience; (7) a tendency to mix knowledge and men's inclinations — to find what one looks for; (8) impatience of doubt, and haste to conclusions and assertions without due and mature suspension of judgment; (9) dogmatic delivery of knowledge; (10) the tendency to become commentators rather than original discoverers; and (11) mistaking the aim or "furthest end of knowledge."

Third, there are four types of phantoms each of which affects the curriculum. The first phantoms, those of the tribe, lead to the judgment of educational affairs with preconceived notions and with a narrowness of mind which

prevents a thorough trial of the particular cases which are observed. Second, the phantoms of the den are characterized by an enslaving love for particular sciences and subjects of thought and by a failure to see the whole of the problem or science which is contemplated. Third, the phantoms of the market-place, which lead men into error by means of the words or phrases used in attempting to classify knowledge or speculative matters. Fourth, the phantoms of the theatre lead men to accept all kinds of unproved theories and to base practices upon them as though a given problem had been thoroughly tested by experimentation.

7. *Descartes.* René Descartes (1590–1650) charged the schools of his day with the neglect of the real values of algebra, geometry, and logic. He found geometry and algebra highly abstract: "the former is so exclusively restricted to the consideration of figures, that it can exercise the Understanding only on condition of greatly fatiguing the Imagination (the representative capacity); and, in the latter, there is so complete a subjection to certain rules and formulas, that there results an art full of confusion and obscurity calculated to embarrass, instead of a science fitted to cultivate the mind." [1] Logic was found to be so full of error that the "severance of the true from the false" was quite as difficult "as it is to extract a Diana or a Minerva from a rough block of Marble." [2] Instigated by these views, Descartes attempted to "borrow all that was best both in Geometrical Analysis and in Algebra, and correct all the defects of the one by the help of the other." [3] The result was analytic geometry for higher education, but the effect upon secondary-school mathematics has only recently reached

[1] *Discourse on Method,* Part II. *The Method, Meditation, and Selections from the Principles of Des Cartes.* Translated by John Veitch, 1850.
[2] *Ibid.* [3] *Ibid.*

America. In the natural sciences Descartes continued the criticisms of Aristotelianism and greatly aided the cause of experimental science. It was this interest in science which insured its introduction into the curriculum of the French schools of his day.

8. *The encyclopedists.* Lord Herbert of Cherbury (1581–1648), whose views on the curriculum have already been cited,[1] John Amos Comenius (1592–1671),[2] John Dury (1596–1680),[3] John Milton (1608–1674),[4] and John Locke (1632–1704)[5] criticized the narrowness of the contemporary courses of study and also the sterility which follows Ciceronian procedures in teaching. For example, Comenius held that the secondary school should enable pupils to become versed in the seven liberal arts of the Middle Ages and furthermore to be:

> Physicists, who know the composition of the earth, the force of the elements, the different species of animals, the powers of plants and of minerals, and the structure of the human body, and who, besides knowing these things, can apply them to the various uses of life. Under this head is thus comprised a part of medicine, of agriculture, and of other mechanical arts.
>
> Geographers, who are well acquainted with the external features of the earth, and know the seas, the islands that are in them, the rivers, and the various kingdoms.
>
> Chronologers, who can fix periods of time, and trace the course of the centuries from the beginning of the world.
>
> Historians, who possess a fair knowledge of the history of the human race, of the chief empires, and of the Church, and who know the various customs and fortunes of races and of men.
>
> Moralists, who can draw fine distinctions between the various kinds of virtue and of vice, and who can follow the one and avoid

[1] See p. 133.
[2] See *The Great Didactic.*
[3] See J. W. Adamson's *Pioneers of Modern Education.* Chapter VIII.
[4] See his *Tractate on Education,* 1644.
[5] See his *Thoughts Concerning Education,* 1693.

the other. This knowledge they should possess both in its general form and in its special application to the life of the family, of the state and of the Church.

Finally, we wish them to be theologians, who, besides understanding the principles of their faith, can also prove them from the Scriptures.

When this course is finished, the youths, even if they have not a perfect knowledge of all these subjects (indeed at their age perfection is impossible, since experience is necessary to complete the theoretical knowledge that they have acquired, and the sea of learning cannot be exhausted in six years), should, at any rate, have laid a solid foundation for any more advanced instruction that they may receive in the future.[1]

In addition to his constructive criticism of the curriculum in general, Comenius attacked the organization of instructional materials in Latin and finally reorganized them into a well-graded series of lessons. This series which revolutionized the teaching of Latin was accompanied by an attempt to compose a *Gate of Phenomena or Doorway to Wisdom.* This "outline of universal wisdom," although continuing a plan which had been carried out in part by Aristotle, Isidore of Seville (d. 635), and Vincent of Beauvais (1264) and strongly favored by contemporaries of Comenius, was never completed. It had, however, the great value of calling to the attention of scholars the need for a systematization and unification of all the knowledge then extant.

John Dury in his *Reformed School* (*c.* 1649) divided the branches of learning into two large groups:

First, "the profitable Arts and Sciences," that is, "all matters of knowledge which direct man to the right use of all Creatures, and the ordering of his owne Faculties about them." Secondly, the

[1] Keatinge, M. W. *The Great Didactic of John Amos Comenius.* A. and C. Black, 1896. P. 427.

Tongues which are most useful to enlarge the knowledge thereof, namely, Latin, Greek, Hebrew, and the Oriental affinities of the last. But in prescribing these ancient languages he is not urged by the literary motive, by the desire for culture, or by scorn of the "useful." Quite the contrary: "Tongues are no further finally useful then to enlarge Traditional Learning: and without their subordination unto Arts and Sciences, they are worth nothing towards the advancement of our happiness. The Immediate Use of Tongues is only to Understand what others say to us, according to their custome of speaking; and to express our minds unto them significantly according to our custome."

As Adamson points out, the general plan of Dury, if it had been adopted, "would have revolutionized the schools of the time." Arts and sciences would have been taught first in the mother tongue, and languages postponed to a later period of study:

The teaching of words is no further Usefull then the things signified thereby are familiar to the Imagination, and that the teaching of Rules before the Materiall Sense of the words is known, or before the formall coherence of things which their construction is to represent in a Sentence, can be apprehended, is wholly preposterous and unprofitable to the Memory.

"So farre as children are capable of Traditionall knowledge; so farre in every degree of Science they may be taught the Tongues which serve for that Use; but till they be fitted for the one, the other is Useless to them.

Whatsoever in the teaching of Tongues doth not tend to make them a help unto Traditionall knowledge, by the manifestation of Reall Truths in Sciences, is superfluous, and not to be insisted on, especially towards Children, whence followeth that the Curious study of Criticismes, and observation of Styles in Authors, and of straines of wit, which speak nothing of Reality in Sciences, are to be left to such as delight in vanityes more then in Truths.[1]

[1] Adamson, J. W. *Pioneers of Modern Education 1600–1700.* Cambridge Press, 1905. Pp. 147–148. See also H. J. Scougal's *Die Pædagogischen Schriften John Dury.* Jena, 1905.

9. *Defoe.* Daniel Defoe (1661–1731), to whom reference has already been made,[1] criticized the customs which produced an ignorant gentry and proposed a solution for the difficulty. The solution was in part a curriculum problem. The schools were, Defoe alleged, designed by and for pedants and were not suitable for the boy who was to become a gentleman:

"Shall my son," exclaims the incensed but gentle mother, "be sent to school to sit bare-headed and say a lesson to such a sorry diminutive rascall as that; be brow beaten and hector'd and threaten'd with his authority and stand in fear of his hand! *my son!* that a few yeares after he will be glad to cringe to, cap in hand, for a dinner! no, indeed, *my son* shall not go near him. Let the Latin and Greek go to the D——l. *My son* is a *Gentleman*, he shan't be under such a scoundrel as that." [2]

This deplorable attitude toward schools was caused largely, Defoe believed, by the impractical program of studies and could be remedied by revising the program as suggested above, and as recommended also by John Dury.

(For bibliographical notes, see end of Chapter VIII.)

[1] P. 136. [2] *The Compleat Gentleman*, p. 7. Bülbring's edition.

CHAPTER VII

CONSTRUCTIVE CRITICISMS OF SECONDARY SCHOOL CURRICULA IN LATER MODERN TIMES

Later modern critics and their proposals for educational reform. Eight principal lines of criticism characterize later modern discussions of desirable educational reform. As a basis for the first line of criticism, the quality of Defoe's criticism of curriculum practices has continued to the present time and still colors much of present-day curriculum thinking. This quality may be called the conflict between humanism and realism. With many scholarly thinkers this conflict has changed to a reconciliation of humanism and realism and a consequent advocacy of a "liberal" education A second form of criticism and one which has continued from ancient times is that involved in the disciplinary conception of education. A third form of criticism and one which is closely related to the disciplinary variety is also an outgrowth of psychological issues. This criticism has called attention to the failure of schools to consider adequately the nature and the needs of the educand. A fourth form of criticism, although vaguely raised by mediævalists, came into prominence in later modern times in connection with the philanthropic movement. Out of the philanthropic and realistic movements came a heightened interest in the nonprofessional vocations. When, in the latter part of the nineteenth century, this directly practical vocational tendency united with an attempt to rationalize the practical arts, there came criticisms of the narrow scope of

secondary education and a plea for curricula which would train artisans in theory and practice. Three additional forms of criticism have left their impress upon modern secondary education. One of these forms of criticism has accompanied the age-old interest in moral and religious instruction. Out of this latter interest has come of late a pronounced tendency to criticize the schools for their failure to provide adequate training for the general and specific duties of an efficient citizen. Finally, the modern period has brought to notice such overwhelming amounts of subject matter and has uncovered so many needs for training that the program of studies has been unable to carry to each pupil even a bare sketch of many fields of knowledge. Consequently, much criticism has arisen since the beginning of the nineteenth century of the organization of the curricula, and, during the early years of the twentieth century, of the organization of the subject matter within each course of the curricula. This form of criticism, although older than Aristotle, has recently become popularized and has many advocates.

This section is devoted to the eight broad types of modern criticism just named: (1) criticism of the relative importance of humanism and realism; (2) criticism of the disciplinary values of studies; (3) criticism of the neglect of child psychology; (4) criticism of the facilities for educating the masses; (5) criticism of the vocational values of education; (6) criticism of the æsthetic elements of education; (7) criticism of the social values of education as shown in moral, religious, and civic activities in schools; and (8) criticism of the internal organization of curricula and of individual studies and activities. Although these criticisms are in general emphasized chiefly each in a given period, it would be wide of the truth to attempt to confine any one of

these or the reforms connected therewith entirely to any single decade or half century. Indeed, many of the ablest critics of modern times have thrust their shafts against several of these objects of criticism. Despite this fact, an attempt will be made in the subsequent discussions of this chapter to treat recent criticisms by movements instead of by men. This procedure will involve recurring references to certain critics, but will, it is hoped, give a simple and manageable grasp of the main lines of criticism. No attempt will be made to include all modern reformers in this discussion; only a few of the most important names will be included in the text.

Critical discussions of humanistic, realistic, and liberal studies. An unbroken line of criticism accompanies the modern expansion of the program of studies. In Chapter V, the first modern schoolmaster, Vittorino, was portrayed as offering curricula which were liberal and inclusive in the later modern sense of the term *liberal*. The same chapter described other schools which were liberal; but it showed also that the prevailing type of secondary school, the school which prepared boys for college, was a school of classical languages and, in some cases, of classical literature. A third type of school, that in which the classics were either subordinated or omitted, was also in existence from mediæval times. As these three types of schools persisted, there were, naturally, advocates for each type.

The comments of Defoe, like those of his contemporary Swift, were called forth in connection with the controversy over the merits of ancient and modern learning.[1] The significance of the educational controversy of that period

[1] Cf. Jonathan Swift's *Battle of the Books*. The controversy in which Richard Bentley and William Walton were the scholarly and doughty opponents of Swift and William Temple was in part a question of the classics *versus* modern literature.

has been indicated by its influence upon Franklin and other leaders in the academy movement. That further criticism was needed during Franklin's time has also been shown by the fact that even in his own academy a modern curriculum experienced no little difficulty. Such criticism was made by influential writers and publicists of many countries. In France, Diderot, the encyclopedist, criticized contemporary schools and advocated the dropping of useless studies and the providing of what he called a balanced program of studies. Instead of mere language schools in which not a word of biology, chemistry, or geography and little of physics was heard, he proposed schools in which the first five years were to be devoted to science and mathematics and only the last three years to grammar and the classics.[1] In England, Adam Smith and Jeremy Bentham were important reformers. In 1776, Smith in *An Inquiry into the Nature and Causes of the Wealth of Nations* asserted that "The greater part of what is taught in schools and universities, however, does not seem to be the most proper preparation for the business" of living in a modern world.[2] The narrow scope of education was criticized similarly by Bentham in his *Chrestomania* (1816) in which he advocated giving prominence to physical science and reducing the attention devoted to the classics. A few years later Carlyle, apparently fired by Gœthe's *Wilhelm Meister,* began his series of attacks upon the gerund-grinding of the schools. Instead of the deadening formalism of which he accuses the schools, Carlyle points the way to liberal training: "Here are Books, and we have brains to read them; here is a whole Earth and a whole Heaven, and we have eyes to look on them." [3]

[1] *Plan of a University* (1776).
[2] See his Book I, Chapter I, Articles 2 and 3, for additional remarks about education.
[3] *Sartor Resartus,* Book II, Chapter III.

From 1800 to 1875 a group of scientists preached realism, sometimes with moderation and at other times with the fervor of enthusiasts. Of the group of Englishmen who were especially important in this matter, George Combe (1788–1858) was one of the most active and influential. As a result of the existing schemes of education which had been devised by men learned in the Greek and Latin languages, in an age when extremely little of physical and biological nature was known and when linguistics constituted the staples of instruction, England, in 1850, had, according to Combe, little save antiquated curricula in her schools. Look at the schools over the kingdom, says he, and see what is taught; the subjects are "Reading, writing, arithmetic, geography, and, in some, a little algebra and mathematics, and the catechism. But in not one of those branches of knowledge is there one iota of causation; and yet on our knowledge and judicious application of causes, depends our well-being or misery in this life." [1] In order to correct this educational disorder, Combe proposed a "grand reform" which he believed could be achieved by teaching (1) things that exist; (2) their modes of action; (3) the nature of man; (4) certain important relationships between man and nature; and (5) social, æsthetic, and religious matters. Combe, like his American contemporary, Caldwell, collected the opinions of other distinguished men such as Milton, Locke, Watt, Arkwright, Franklin, Gibbon, and Adam Smith to show that, as taught, the classics were of little value.[2] He closed his own account of the matter by saying that "The greatest evils attending a purely classical educa-

[1] *Education; Its Principles and Practice as Developed by George Combe.* Edited by William Jolly. Macmillan and Company, 1879. P. 39. See also the discussion of this period in Chapter V of the present treatise.

[2] Caldwell, Charles. *Thoughts on Physical Education, and on the Study of Latin and Greek.* With a preface by George Combe. Edinburgh, 1836.

tion appear to me to be the ignorance in which it leaves the pupil of the objects, agents, and relations existing in nature and social life, and the extent to which, in consequence, his mind is exposed to the influence of prejudice and superstition. A thorough education in knowledge, on the other hand, enlarges, invigorates, and humanizes the whole mental powers, wherever they possess native aptitude for improvement."[1] Combe's central theory was, in brief, "We should train to do more than to know."[2] In pressing this point, however, Combe failed either to admit possible improvements in the teaching of the subjects which he condemns or to show how his favorite subjects could be effectively presented. He did, however, give many examples of how to present the sciences and social studies, but, singularly enough, these examples show extreme reliance upon verbal experiences to which, in the case of the classics, he took exception.

Of greater influence as preachers of science were Spencer and Huxley. Spencer, in the essays on education which he wrote between 1854 and 1859, attempted to answer the question, "What knowledge is of most worth?" After canvassing modern life and its needs, he found that five tests would enable one to answer his question. These tests consist of determining whether knowledge is valuable for direct self-preservation, acquiring a livelihood, discharging of parental functions, regulating civic conduct, and participating in art in all its forms. He found that one subject, science, was of greatest value in each of these matters: "Necessary and eternal as are its truths, all Science concerns all mankind for all time. . . . Though to the progress of science we owe it, that millions find support where once there was food only for thousands," yet, "Science is the

[1] Combe, *op. cit.*, p. 82. [2] *Op. cit.*, pp. 12–13.

household drudge, who, in obscurity, hides unrecognized perfections." While science was, therefore, accorded the highest place, there were at the opposite end of the scale the studies which received the greatest attention in the schools — those studies which are based upon the miscellaneous leisure activities. To whom this preëminent subject of science is most worth, and what parts of science are of greatest worth, Spencer does not say. Neither does he attempt to organize science into suitable units for teaching in different years of school. Of this last alleged fault he may be absolved, because he was attempting only to establish general principles. While the same excuse may be offered for his failure to discriminate among the recipients and benefits of science, his high purpose of popularizing science should have been fortified by at least a few rough specifications as to the administering of science to pupils.

In his *Science and Education*,[1] Huxley outlined an educational philosophy and a program of studies which should deal constructively with both classics and sciences. His criticisms have the great advantage of attacking not only the failure of schools to provide instruction in science, but also their failure to find humanism in the classics. He contended that the gerund-grinding schools were language, but not literature, schools. The term *humanism* as he defined it escaped the limitations of the classics and included literature in general, science, social studies, and art. The program of studies which he proposed consisted, therefore, of English literature, translations of the greatest works in all languages, English composition, natural science, history, civics, geography, music, and art.

Huxley gave five reasons for his faith in science as a school subject. First, children should learn science in connection

[1] *Collected Essays*, Vol. III. 1893.

with their own spontaneous activities. If they are encouraged in suitable activities, they will become familiar with nature; then through curiosity and observance they will learn about nature. Second, youth should learn from science the place of man and the earth in the universe. From such knowledge should come a wholesome respect for life and a desire to know, by investigation, more about man. Third, science exemplifies the idea of causation. Concrete cases of causation, as observed in science, should give practice in the application of a basic principle in human life and thought. Fourth, the study of natural science is the study of human life itself; that is, science is based upon the universal method of life.

> The life, the fortune, and the happiness of every one of us, and, more or less, of those who are connected with us, depend upon our knowing something of the rules of a game infinitely more difficult and complicated than chess. . . . The chess-board (in this game) is the world, the pieces are the phenomena of the universe, the rules of the game are what we call the laws of nature. The player on the other side is hidden from us. We know that his play is always just and fair and patient. But we also know, to our cost, that he never overlooks a mistake or makes the smallest allowance for ignorance. To the man who plays well the highest stakes are paid with that sort of overflowing generosity with which the strong shows delight in strength. And one who plays ill is checkmated — without haste but without remorse. . . . Well, what I mean by Education is learning the rules of that mighty game.[1]

To this point, we shall return in the discussion of the disciplinary conception of education. Fifth, the capacity to conduct independent research is at the base of progress and depends for its development upon scientific training. The first four of these aims are directly connected with secondary education. Taken together, they give

[1] *Ibid.*, Essay 4.

science a place among the humanities, and they give at the same time a basis for analogous claims for other school subjects.[1] An earlier use of the same arguments for both science and language is that of Sidgwick in his essay on *The Theory of Classical Education* (1867). Although Huxley's arguments have been of great worth to the development of scientific teaching, they have been of hardly less value to literature teaching.[2]

Up to this point, this section has given place to men who were chiefly interested in the sciences. Other scholars, such as Sidgwick, Mill, and Arnold, of the nineteenth century were interested in the classics as well as in science. Sidgwick assembled the reasons for studying Latin — linguistic, disciplinary, and literary — and maintained that in none of these respects was Latin unique in providing training.[3] In purely linguistic matters, he maintained that, although Greek and Latin most certainly gave important elements to the English language, nevertheless they gave only a part, and that, for the professional man as well as for the general student, the philological values could be got by direct teaching of English as in general language courses. In disciplinary matters, he asserted that, although there might be value in turning an idea from one language to another, the translations actually rendered often failed to give as

[1] Cf. the use made of arguments for science by F. W. Kelsey *et al.*, *Latin and Greek in American Education.* The Macmillan Company, 1911. P. 21.

[2] Other distinguished scientists, as Faraday, Whewell, and Tyndall, were also notable critics of overemphasis upon linguistics and the neglect of science. Their papers or else extended reviews of their writings are to be found in the following books: Farrar, F. W., *Essays on a Liberal Education,* Macmillan and Company, 1868; Youmans, E. L., *The Culture Demanded by Modern Life,* D. Appleton and Company, 1867; and Barnard, Henry, *Studies and Conduct,* Hartford, 1873. The essays contained in these volumes comprise indispensable summaries of the contemporary discussions of the sciences and the classics.

[3] *The Theory of Classical Education* in F. W. Farrar, *op. cit.* Macmillan and Company, 1868.

clear discipline as classical advocates supposed. For example, the want of resourcefulness of pupils compels the schoolmaster to "sacrifice accurary or style, and he, as a rule, wisely determines to sacrifice style for the time." [1] In literary matters he contended that few pupils carried the classical language to the point at which classical literature is thrown open; and, at anyrate, he held that many nations and many eras had created worthy literature, so that it was no longer "a point of capital importance that any particular literature should be so thrown open." [2] Finally, he cited the instance of Plato who wrote over the door of his school of life, "Let no one who is without geometry enter here," and asked thoughtful men what the inscription over the door of the school of life should be in the nineteenth century of the Christian era.[3]

In the same vein as Sidgwick's own answer to this question, John Stuart Mill answered:

> This question, whether one should be taught the classics or the sciences, seems to me, I confess, very like a dispute whether painters should cultivate drawing or colouring, or, to use a more homely illustration, whether a tailor should make coats or trousers, I can only reply by the question, why not both? Can anything deserve the name of education which does not include literature and science too? If there were no more to be said than that scientific education teaches us to think and literary education to express our thoughts, do we not require both? And is not anyone a poor maimed, lopsided fragment of humanity who is deficient in either? We are not obliged to ask ourselves whether it is more important to know the languages or the sciences. . . . I am amazed at the limited conception which many educational reformers have formed to themselves of a human being's power of acquisition. . . . How absurd, they say, that the whole of boyhood should be taken up in acquiring an imperfect knowledge of two dead languages. I should prefer to see these reformers pointing their attacks against

[1] *Ibid.*, p. 115. [2] *Ibid.*, p. 130. [3] *Ibid.*, p. 140.

the shameful inefficiency of the schools, public and private, which pretend to teach these two languages and do not.[1]

No less able was the plea of Matthew Arnold for literary study, but, like Mill, he contended for both science and the classics. Even among literary studies he would include knowledge of great scientific discoveries and methods.[2] The literary study of science was not, however, accorded as high a place as that given to strictly literary studies. That is, human nature, according to Arnold, is strengthened and enriched by "the power of conduct, the power of intellect and knowledge, the power of beauty, and the power of social life and manners,"[3] and science serves to develop the power of intellect and knowledge, while fine literature serves the higher purpose of developing beauty and conduct.[4]

A more recent group of educational reformers and critics includes Eliot, Flexner, Shorey, Dewey, Cubberley, and Bobbitt. Eliot attacked compulsory Latin by pointing out, first, the recent conceptions of education and, second, the inutility of school Latin.[5] These conceptions were (1) that education now includes knowledge of the science of nature, economics, and society; (2) that science is now the gateway to efficient citizenship and material rewards; and (3) that other subjects than languages provide training in such desirable matters as observation, recording, and reasoning. The reasons for placing Latin upon an elective basis were (1) that Latin is no longer necessary for the study of the

[1] *Inaugural Address Delivered to the University of St. Andrews.* 1867. For an elaboration of this point by a German scholar, see F. Thilly, "Paulsen's *Modern Education*," *Educational Review*, XXXVI, 458–470. December, 1908.

[2] *Discoveries in America*, essay on "Literature and Science."

[3] *Ibid.*, p. 101.

[4] *Ibid.*, p. 111. A somewhat similar view of curricula was taken by W. T. Harris and will be presented later in this section.

[5] Eliot, C. W. "The Case Against Compulsory Latin." *Atlantic Monthly*, CXIX, 352–361. March, 1917.

world's most valuable literature; (2) that Latin literature does not provide indispensable discussions of society; (3) that Latin is not utilitarian even for professional men; (4) that love for Latin seldom follows compulsion; (5) that Latin is superfluous in the understanding of Roman life and thought; and (6) that Latin as a literary subject is a dead-end subject because it is dropped before proficiency is attained.

Flexner continued the attack upon Latin in *A Modern School*.[1] This pamphlet was mainly a description of a realistic treatment of the subjects which should, in Flexner's opinion, be offered in a modern school. These subjects are science, industry, civics, and æsthetics — literature, language, art, and music. The lack of realism in present practices in certain of these subjects was soundly criticized: science, including mathematics, as prematurely abstract and verbal; literature as antiquated in subject matter, ill-timed, and unappealing; foreign language as being taught as though the language itself were an end instead of a means to an end. Undesirable traditional attitudes were blamed for both content and method in much of mathematics and English and foreign literatures. The following paragraph indicates the boldness with which this critic would eliminate the subjects which he regards as useless:

> Neither Latin nor Greek would be contained in the curriculum of the Modern School — not, of course, because their literatures are less wonderful than they are reputed to be, but because their present position in the curriculum rests upon tradition and assumption. A positive case can be made out for neither. The literary argument fails, because stumbling and blundering through a few patches of Latin classics do not establish a contact with Latin

[1] Published 1916 by the General Education Board. Revised and reprinted in *A Modern College and a Modern School*. Doubleday, Page and Company, 1923.

literature. Nor does present-day teaching result in a practical mastery of Latin useful for other purposes. Mature students who studied Latin through the high school, and perhaps to some extent in college, find it difficult or impossible to understand a Latin document encountered in, say, a course in history. If practical mastery is desired, more Latin can be learned in enormously less time by postponing the study until the student needs the language or wants it. At that stage he can learn more Latin in a few months than he would have succeeded in acquiring through four or five years of reluctant effort in youth. Finally, the disciplinary argument fails, because mental discipline is not a real purpose; moreover, it would in any event constitute an argument against rather than for the study of Latin. I have quoted figures to show how egregiously we fail to teach Latin. These figures mean that instead of getting orderly training by solving difficulties in Latin translation or composition, pupils guess, fumble, receive surreptitious assistance or accept on faith the injunctions of teacher and grammar. The only discipline that most students could get from their classical studies is a discipline in doing things as they should not be done.[1]

Classicists were very properly aroused by these assaults upon the ancient languages. Promptly to the defense came Shorey.[2] He contended eloquently that the classics should be retained because those subjects even now represent the survival, in a small class of educated leaders, of the true conception of linguistic, literary, and critical discipline. He held further, as did certain nineteenth-century English writers, that if the classics be eliminated, their place will probably be filled by less well-organized subjects of questionable value. West continued the controversy by assembling witnesses who professed that no negligible amounts of their powers were due to their profitable years of Latin

[1] Flexner, Abraham. *A Modern School.* The General Education Board, *Occasional Papers*, No. 3. 1916.

[2] Paul Shorey, *The Assault on Humanism.* Atlantic Monthly Press, 1917. Also in the *Atlantic Monthly*, CXX, July, 1917.

study.[1] The importance of this controversy lies partially in its influence upon the Classical League and the investigation conducted by the League.

The criticisms of the classics as cited have shown two tendencies: the first is that of beginning any consideration of school subjects with the apparent purpose of finding sufficient reasons for continuing the use of what is already provided in curricula; the second tendency consists of examining society to determine what needs the curricula should meet. The second tendency characterizes such analyses as those of Castiglione and Defoe. It is much more fully exemplified in critical works of Bobbitt and other modern writers.[2] As applied to Latin, for example, this procedure leads Bobbitt to examine the five uses of a language as a form of expression: (1) in speaking or hearing language; (2) in writing or reading communications; (3) in finding out the learning of the world; (4) in reading as a leisure occupation; (5) in one's own thinking. In none of these activities does Bobbitt find Latin useful. This leads to the criticism that Latin, as a means of expression, is, therefore, not a legitimate subject for general education. The indirect functions of Latin are next canvassed, first, to discern whether Latin helps English to function better, and, second, to find out whether Latin possesses disciplinary values. As a result of his conclusions upon these points, Bobbitt formulated objectives, guiding principles, and assumptions which if properly carried out will, he believes, lead teachers of Latin to produce a maximum of benefit from their subject. In thus treating Latin, and by launching his criticism against both the content and the methods of Latin courses, Bobbitt goes beyond his predecessors in

[1] West, A. F. *The Value of the Classics.* Princeton University Press, 1917.
[2] Bobbitt, Franklin. *How to Make a Curriculum.* Houghton Mifflin Company, 1924.

the extent of his analysis of reasons why this or any other subject should be admitted to a program of studies. His final challenge is united with the notion that pervades his treatment of other subjects; namely, the elements of any curriculum are effective in proportion to the zest and self-activity of the pupils who are studying. To obtain the disciplinary values, teachers of Latin are required, therefore, to arouse zest and pupil activity as at least partial guaranties of attaining these values.[1]

Critical discussions of the disciplinary values of studies. From the time when Plato required that students come to him only after their minds had been whetted by geometry, disciplinary values of studies have been recognized. During the later modern period, discussions of such values have gained in refinement as a result of greater speculative analysis and experimental study. Two principal disciplinary theories, each with numerous modifications, have been held. According to the first theory, the mind consists of various parts or faculties, as judgment, memory, discrimination, each and all of which can, by systematic training, be improved, singly or severally, in both facility and power. As this theory has been discarded by experimental psychologists, it has little if any value as a source of educational reform. According to the second theory, the mind consists of highly integrated tendencies or potentialities, and is under the domination of ideas or configurations which result from natural endowment, experiences, and interests, and which can be changed, broadened, or dwarfed by further experiences and interests. The mind is thus a correlated mass of active tendencies whose activity is influenced (1) by native capacity, (2) by interest or attitude, and (3) by

[1] See also Chapters XIX–XXI of the same author's *The Curriculum*. Houghton Mifflin Company, 1918.

content or stock of facts and skill. Education can affect the second and third of these items; special abilities may be due to any or all three items. As the acceptance of some form of this second principle of the mind has accompanied modern educational reform, the following discussion centers about this theory.

Building in part upon Kant's psychology, Herbart asserted that every avenue to the pupil's mind should be thrown open to produce harmonious development.[1] In order to obtain an effective presentation of content to the pupil, he held that knowledge must be correlated about two main branches — the historical including literature and the scientific including mathematics, the first based upon social intercourse and the second upon experiences with nature. Disregarding the subjects which Herbart happened to emphasize, there is here a departure from faculty psychology and a constructive account of how children can equip their minds for adulthood. Here the discipline consists of opening the "windows of the soul" so that the ideas and attitudes of the child can be acted upon by the ideas which are pressing from without. The more perfect the windows, that is, the better the subject matter, the more effective the discipline. This form of discipline differs from faculty psychology in emphasizing the value of acquired content and of interest as a common denominator instead of emphasizing the development of powers such as memory and judgment. The influence of Herbartian philosophy was greatest near the close of the nineteenth century, and it was manifested by criticism of all curricula in which correlation was wanting within any subject or between different subjects.[2]

[1] Herbart, J. F. *Outlines of Educational Doctrine.* Translated by A. F. Lange and C. De Garmo. The Macmillan Company, 1901.

[2] See especially the reports of the Committee of Ten and the Committee of Fifteen.

Equally strong emphasis upon the organization and presentation of subject matter as determinants of disciplinary values can be found in the other nineteenth-century writings. Matthew Arnold, for example, criticized the sciences as taught in 1870, but predicted that when the sciences were as well organized for teaching as were the languages, the sciences would be as valuable as the languages in disciplinary effects.[1] Again, Henry Sidgwick, in his essay entitled, *The Theory of Classical Education*,[2] lays down criteria for judging the value of linguistic training, and concludes that such training, to be effective, must be superior in both quantity and quality if desirable disciplinary effects are to be achieved. He alleges that the pupil who is exhausted with linguistic struggles is not in a state to receive delicate literary impressions or their accompaniments; instead, such a pupil is filled to the brim with linguistic husks which from a literary standpoint are no more valuable to a modern youth than they were to the Ciceronian of the time of Erasmus. From a disciplinary standpoint, however, Sidgwick maintained that such formal linguistic drill was valuable, but that when followed exclusively, it led to a neglect of the disciplines which should be got from the world of objective phenomena. Substantially, the same were the contentions of the scientists, Huxley and Spencer, although the latter seems at times to give little disciplinary credit of any profitable sort to linguistics.[3] Recent discussions of disciplinary values contain criticisms of the notion that all subjects will of themselves cultivate equally the capacities of all pupils, and of the related opinion that all pupils will profit equally, quantitatively or qualitatively, by pursuing any given subject. Dewey, for example, asserts that any subject, such as

[1] *Higher Schools and Universities in Germany.* P. 175.
[2] Farrar, F. W., *op. cit.*, pp. 81–143.
[3] See works of Huxley and Spencer already cited.

mathematics, may be used as an instrument for the attainment of desired values, but that it does not of itself possess any miraculous powers. Instead, he says, mathematics has values only when it accomplishes certain results and not otherwise. The values depend, therefore, upon other matter than the nature of the subject itself; that is, upon the character of the teaching which includes the organization of the subject matter for purposes of teaching.[1] To this criticism, Chapman and Counts add two very trenchant comments: first, that no subject is ever defended largely for its disciplinary value until after its more obvious social values begin to wane; and, second, that the amount of transfer is dependent upon the development of intelligence of the learner.[2]

Critical discussions of the relationship between studies and child life. Modern reformers have built upon works of the numerous educators who, beginning with Quintilian, had emphasized child study as basic in planning curricula. The main line of this criticism runs through Rousseau, Pestalozzi, Herbart, Froebel, Colonel Parker, Dewey, and Bobbitt. While it is obviously impossible to teach without considering the person who is to be taught, Rousseau alleged in *Emile* that a mania for instruction obsessed the teachers of his day. This mania, he maintained, magnified the place of the teacher and the importance of content at the expense of the pupil's nature and needs. This neglect of the child's disposition, interests, and stage of maturity, was appreciated by Pestalozzi, who as he read Rosseau and practiced the art of teaching became convinced that "all educative instruction must be drawn out of children themselves, and

[1] Dewey, John. *Democracy and Education.* The Macmillan Company, 1916. Pp. 287–8.

[2] Chapman, J. C. and Counts, G. S. *Principles of Education.* Houghton Mifflin Company, 1924. Problem 18.

be born within them." [1] This principle which Pestalozzi applied in discussing contemporary schools was applied by him to both methods and curricula. Scientific and philosophical bases were given for the principle by Herbart [2] and Froebel.[3] The belief held by Froebel that education consists of accepting each pupil as he is and providing means and causing activities which will facilitate normal growth was further elaborated by Colonel Parker. Instead of attending to the "dead forms of thought," Parker asserted that educators should take advantage of the child's spontaneous activities which naturally lead the child voluntarily to begin "all subjects known in the curriculum of the university." [4] Dewey, Bobbitt, O'Shea, and others have continued the criticism of curricular activities which do not conform with or naturally grow out of children's needs and interests. As Part IV of this treatise is devoted to this problem, further discussion of it will be omitted in this chapter.

Critical discussions of the relationship between sociological conditions and curricula. Stimulated by the work already accomplished by Francke and by the critical writings of Rousseau, Basedow led a sociological movement in education in which such men as Kant, Lessing, Campe, and Von Rochow were participants. The movement grew directly out of the criticisms of educational systems which were prejudiced against the provisions. Besides the schools which Basedow and his followers established, there are the Pestalozzi-Fellenberg schools, which also developed as a part of the same movement. The sociological criticisms which

[1] *How Gertrude Teaches Her Children.* Translation by Lucy E. Holland and Francis C. Turner. P. 17.

[2] *Outlines of Educational Doctrine.* Chapter II.

[3] *Education of Man.* See also J. A. McVannel, *Educational Theories of Herbart and Froebel.* Columbia University, 1905.

[4] Parker, Francis W. *Talks on Pedagogics.* Kellogg and Company, 1894. Pp. 23–24.

accompanied this European development were reported to American readers in John Griscom's *A Year in Europe* (1823) and Alexander D. Bache's *Report on Education in Europe* (1839). From Griscom's report it is apparent that Fellenberg, Pestalozzi's disciple, did not hold a point of view which is now acceptable, although in 1833 it was far in advance of the beliefs and practices of many American communities. Fellenberg, Griscom wrote, "considers society as divisible nto three distinct parts; the higher (comprehending the noble and wealthy), the middling, and the poor. The greatest defects of education he supposes to exist in the two extreme classes, and that these distinctions or classes among men would always prevail in every civilized country he believed to be incontrovertible; and, of course, any attempt to break down the distinction would be fruitless." [1] Consequently, a cosmopolitan but stratified school was advocated as the best form of educational institution for all classes. In Part V discussions of the modern versions of the sociological point of view of Small, Dewey, and Chapman and Counts will be continued.

Critical discussions of the subject of nonprofessional vocational education. From the Athenian Age to modern times, vocational training has been provided for professional workers. Throughout the same period, the vocational training of nonprofessional workers has been neglected. It was inevitable that this condition should change; three elements or forces contributed directly to critical discussions of the situation: (1) the development of knowledge about nonprofessional vocations; (2) the failure of apprenticeship education to meet industrial needs after the rise of the factory system; and (3) the reënforced interest in mankind in general which accompanied eighteenth-century philan-

[1] *Op. cit.*, vol. I; pp. 382 ff. continue this discussion.

thropinism. In the extension of industrial or nonprofessional vocational education in European countries as well as in America, the third of these forces seems to have played a rôle comparable with that implied in the passage from Griscom cited above.

One of the foremost English critics, George Combe, will serve as an example of the nineteenth-century reformers who were bent upon the establishment of education for industrial workers.[1] Combe held that since "the working-classes are God's creatures," they are as

> well entitled to justice as the higher ranks. Our opinions of the kind of education which the industrious classes should receive, will depend on the objects which we assign to their lives. If they have been created by Providence merely to toil and pay taxes, to eat, sleep, and transmit existence to future generations, a limited education may suffice. But if they have been born with the full faculties of moral, intellectual, and religious beings; . . . in short, if they are rational beings, capable of all the duties, and susceptible of all the enjoyments, which belong to the rational character: then no education is sufficient for them which leaves any portion of their highest powers waste and unproductive.[2]

Later, in 1851, in an address to workmen, Combe maintained that the "human laborer must learn to do something which these (modern machines) cannot accomplish; he must acquire skill to form more intricate combinations, and taste to produce finer results than they."[3]

These somewhat general notions had only to be combined with the practices of Pestalozzi and Fellenberg or with the practices suggested by J. A. Froude to produce modern

[1] Combe did not present a program of education in industrial arts. He attempted, however, to show the practical possibilities of science in industry. See William Jolly, *op. cit.* The present discussion is based upon pp. 491–538 of that work.

[2] *Op. cit.*, pp. 491–492.

[3] *Op. cit.*, p. 503.

industrial education. "Every occupation," said Froude, in one of his critical addresses,

even the meanest — I don't say the scavengers or the chimney sweeps — but every productive occupation which adds anything to the capital of mankind, if followed assiduously with a desire to understand everything connected with it, is an ascending stairway whose summit is nowhere, and from the successive steps of which the horison of knowledge perpetually enlarges. Take the lowest and most unskilled labor of all, that of the peasant in the field. The peasant's business is to make the earth grow food; the elementary rudiments of his art are the simplest, and the rude practice of it the easiest; yet between the worst agriculture and the best lies agricultural chemistry, the application of machinery, the laws of the economy of force, and the most curious problems of physiology. Each step of knowledge gained in these things can be immediately applied and realized. Each point of the science which the laborer masters will make him not only a wiser man but a better workman; and will either lift him, if he is ambitious, to a higher position, or make him more intelligent and more valuable if he remains where he is. . . . The millions must ever be condemned to toil with their hands, or the race will cease to exist. The beneficent light when it comes, will be a light which will make labor more productive by being more scientific; which will make the humblest drudgery not unworthy of a human being, by making it at the same time an exercise to his mind.[1]

Recent years have brought additional critics who contend that training is most effective when education is planned to enable pupils to do better the things which they are doing

[1] Delivered to the students of St. Andrews, 1869. Here quoted from *Letters, Essays, and Thoughts on Studies and Conduct.* Edited by Henry Barnard, Hartford, 1873. The other side of this matter was ably presented by W. T. Harris and B. A. Hinsdale after industrial education propaganda had gained some force in America. For these discussions see Hinsdale, *Schools and Studies* (Bardeen, 1894); Chapter VII of this volume is entitled "Industrial Education and Public-School Reforms," first delivered in 1883. Appended to Hinsdale's chapter is a passage in which Harris showed by a census study "how wild are the theories of those who declaim against the present course of study in the common schools, and demand the introduction of the arts and trades instead of the general disciplines that are now taught."

or will later do anyway. This Comenian principle has been given a thorough philosophical treatment in Dewey's *Democracy and Education* where integrity of developmental processes is emphasized and the artificiality of trying to make the school unlike normal life is criticized,[1] where he criticizes narrowing forms of industrial education, but contends that a necessary relation exists between the support of thoroughgoing mentioned education and realization of democratic ideals and aims. A direct application of this principle to curriculum reconstruction is contained in Briggs's discussion where it is asserted that the

> first duty of the school is to teach pupils to do better the desirable things that they will do anyway. This assumes that the school man can decide, as inevitably someone must do, which of the activities of life are desirable. Lacking any authoritative list of such activities, which will, of course, differ to some extent from one community to another and even from one individual to another, the school man must take the responsibility for making tentative decisions and for modifying his list as new factors are discovered. Then he must ascertain the ways in which each of the most important desirable activities may be performed better.[2]

Although the criticisms which have here been cited do not cover the period under discussion, they do indicate the main line of argument and present-day thought. There has been no attempt to treat adequately the voluminous discussions since 1876 of the values of the practical arts courses for both boys and girls.

Critical discussions of æsthetic, moral, and religious values and of the internal organization of subject matter. As the remaining types of critical discussions lie either out-

[1] Cf. *op. cit.*, Chapters XV–XXIII. See also Franklin Bobbitt, *The Curriculum*, Parts I–II. A sociological treatment of the same principle is provided by Snedden in his *Sociological Determination of Objectives in Education*, J. B. Lippincott Company, 1921. Especially Chapter XIII.

[2] *School Review*, XXXI, 109–115. February, 1923.

side the province of this treatise or of this chapter, only brief reference will be made to them. The two main lines of criticism which have aided the development of æsthetics in education are those (1) of Schiller, who in *The Æsthetic Education of Man* advocated art as a contributor to civilization by the free spontaneous activity which it induces, and (2) of Ruskin, who in many scattered passages, as in *Fors*, pleaded for art as contributing to both the individual and the social aspects of the manufacture of souls of good quality. Throughout historical times the lack of adequate provision for moral and religious values in schools has been criticized. As modern examples, William Cowper in *Tirocinium* and *The Task* indicts the schools for their lack of moral control and moral training; Dickens in many novels deplored the evil social effects of contemporary education; Ruskin, Carlyle, and many other publicists in addresses and writings criticized the lack of adequate moral training in schools, and advocated training which should be both adequate in amount and adapted to children's nature. The internal organization of subject matter has been the target of critics particularly from the time of Comenius. An excellent example of the advocacy of such reform is contained in Harris's recommendations in the Report of the Committee of Fifteen (1895). These recommendations represent the views of many leaders in the correlation movement which grew out of nineteenth-century German educational philosophy. (1) Topics and branches should be sequentially organized so "that each branch develops in an order suited to the natural and easy progress of the child, and so that each step is taken at the proper time to help him advance to the next step in the same branch, or to the next step in other related branches of the course of study."[1] (2) The branches

[1] *Op. cit.*, p. 14.

studied should be so adjusted that, so far as possible at the pupil's stage of maturity, the whole course of study shall represent all the great divisions of human learning. (3) The selection and organization of subject matter within each branch should provide the best possible psychological sequence of subject matter. (4) The course of study should be correlated with the spiritual and natural environment within which the pupil lives.

The importance of the critic as an educational prophet and the problems raised by critics will be discussed in Chapter VIII. Still further consideration of the reconstruction of subject matter and the problems which lead thereto will be found in Part VI.

(For bibliographical notes, see end of Chapter VIII.)

CHAPTER VIII

CURRICULUM PROBLEMS RAISED BY CONSTRUCTIVE CRITICISM

Critics as educational pioneers. A canvass was made in the two preceding chapters of the work of certain critics whose comments apply to secondary-school curricula. Each of these critics expressed variation from the thought and practice of his time. It should now be possible to discover the extent to which departures from undesirable traditional restrictions have been due to criticisms, and particularly to ascertain whether or not, in general, recent desirable reforms have resulted from the application of constructive criticism to curriculum problems. These critics may be thought of also as social diagnosticians; if they have located and defined curriculum problems, their services in locating and defining problems are of the utmost importance whether or not their plans for the solution of the problems have been practicable. This chapter will treat, first, of the value of certain representative criticisms; second, the general tenor of the criticisms; and, third, it will present an outline of a more complete account, which is to be given in later chapters, of how to meet these criticisms and of what is now being done to meet them. Chapters VI and VII on constructive criticism form, therefore, a matrix from which issues a progeny of ideas generated by frontier minds. These ideas are the bases for the subsequent chapters of this book.

The value of representative critical discussions of curricula. It has often been asserted that one of the distin-

guishing traits of man's superiority over the lower animals is his ability to forecast the results of real or proposed actions. Greatest amongst the forecasters are the critics; their prevision is often based upon a more adequate understanding of contemporary conditions than that possessed by most men, and to this understanding is added a vision, which, in breadth and distance, exceeds the range of that of their fellows.

Great periods of history are the result of the acceptance of constructive criticism just as stagnant periods of history are the result of stereotyped ignorance. Just as progress is the result of change, so arrested development is the result of premature stereotyping of systems of thought. But all change does not lead to progress any more than all systematized thought leads to arrested development. It is true, however, that all progress is accompanied by change, as all arrested development is accompanied by stereotyping. What human beings must seek is, therefore, progressive alteration; that is, they must seek guidance during change. Critics offer such guidance not only for their own times, but also for subsequent periods. In other words, if men can examine the proposals of critics and derive therefrom sound principles and adopt those principles, then the acceptance of criticism becomes equivalent to the acceptance of progressive variation in thought. The way of the critic in proposing sound principles is, however, beset with obstructions. The obstructions comprise the thought and practice of his times. Much of this thought and practice has been, in all periods of history, a consequence of earlier constructive criticism and experimentation; a part of this thought and practice is of proved worth. The critic has always been forced to discriminate between the worthy and the unworthy. To this difficult task of discrimination there has been added

the task of breaking through the folkways which have not proved their worth, and of showing the defects of such undesirable folkways. For the best thought of all periods of history has been unknown to smug contemporaries, and advancement has been thwarted by the ignorance of the masses.

Within the group of smug contemporaries who have stood as barriers to advancement, certain educators have played a major rôle. By assuming an uncritical veneration for tradition and authority, these educators have connived with the most ignorant minds of their times in suppressing both change and the consideration of change. Almost equally culpable have been those educators who have uncritically championed the alleged merits of certain novel cultural or practical usages. When, for example, Socrates or Adelard or Roger Bacon pointed out high purposes of society and more direct means of attaining those purposes, other educators rose as champions of unworthy folkways. When Isocrates, Plato, and Quintilian pleaded for thoroughness in the academic preparation of youth, other educators advocated superficial training in directly practical curricula. When Gerbert, Petrarch, Erasmus, and Huxley proclaimed the moral worth of modern learning, contemporary educators frightened timid and ignorant fellows by insisting that knowledge is inimical to religion and morality. When Comenius, Descartes, and Ramus advocated the reconstruction of Latin, mathematics, and logic, other educators showed grave concern about the vanishing of mental discipline. The moral of this account is that many educators exhibit an ignorant fear when critics show sound methods for shortening man's apprenticeship.

The unrecorded and forgotten history of most of the censors of the critics just named, together with the evident

soundness of the views of critics, gives hope for educational progress. History shows that critics often present new views which lead to reforms of educational thought and practice. That is, if enlightened men can formulate their views so as to show the superiority of their views to outgrown folkways, the way to progress will thus be cleared. The duty of the curriculum maker seems, therefore, to be that of finding out how to test criticism and how to apply the desirable elements of criticism. Such a policy will lead the curriculum maker to accept the judgment of the enlightened man as superior to traditions, to examine current opinions in the light of criticism, and to displace deficient opinions by sound principles. In short, this policy will lead to a manly facing of issues and to an honest attempt to derive adequate criteria for measuring educational values. Preparatory for the employing of this policy are (1) an examination of traditional practices, social conditions, and the traits of pupils, and (2) the development of methods of controlling ill-founded criticisms. Bases for such a preparatory discussion have been laid in the foregoing pages.

The relation of critical thought to curriculum making for secondary schools should be clear. Secondary education is of vital importance to all pupils. The practices of secondary schools should, therefore, be governed by the best thought of the times. In the determination of these practices, criticism is invaluable, because critics subject educational needs and objectives to a searching analysis, and then estimate the value of actual practices in the attainment of objectives. Even though the critic lacks a complete policy or program, as did Socrates, his searching analysis may have great value in diagnosing educational problems. The critic may, and often does, as did Plato and Aristotle, suggest or collect vast ranges of materials for the training of adolescents. In the

periods of progress in secondary education, criticism has led educators to examine the subject matter of secondary education and to see its worth for enjoyment, for futile objectives, or for real and valid ends.

Such a procedure has often led to trenchant and most unpleasant comments upon education. These comments have indeed been at times so unwelcome to the ears of powerful reactionary educators, that critics such as Adelard have assigned their comments to unmentioned or earlier men. More frequently critics have proceeded directly, as did Roger Bacon, in their attempts to unshackle the schools from vested interests. Erasmus, for example, criticized teachers of Latin soundly for teaching language only, while they pretended to teach both language and literature. In a similar mood, Rabelais ridiculed the pedantry of self-styled educators. Later in the same century, Descartes exposed the failure of teachers of mathematics to grasp the meaning of their own subject, and, in the following century, Dury challenged the classical approach to the study of natural science. Few if any critics of any period have diagnosed more clearly than Francis Bacon the ills of educational practice. His discussion of the diseases, peccant humors, and phantoms of learning is still the basis for some of the most apt criticisms of secondary-school curricula.[1]

The need for the recurrence of such criticisms as those of Francis Bacon is shown by the fact that his criticisms are still applicable. That is, just as fifteenth-century educators required chastening by Valla in the same terms employed in the thirteenth century by Grosseteste, so modern educators still require counsel and chastisement similar to that

[1] Cf. the criticisms made by T. H. Briggs, "Curriculum Reconstruction in the High School," *School Review*, XXXI, 109–115. February, 1923. (Reprinted in W. L. Uhl, *Principles of Secondary Education*, pp. 637–643.)

delivered by Francis Bacon to educators of the seventeenth century. Other criticisms which recur and which have perennial value are those of Aristotle upon liberal and illiberal values. In contending that ill-organized materials and practices lead to irrational results and that subject matter to be effective must be integrated, Aristotle anticipated the work of Herbart, Arnold, Harris, and Dewey. Out of such criticism have sprung the attempts of recent educators such as Dewey and Cubberley to avoid confusion of the terms liberal or cultural and illiberal or practical and to attempts to organize curricula and individual subjects to yield both liberal and practical values. Still later, such criticism has led Bobbitt and Charters to activity analysis to discover the liberal and practical values which pupils need to attain. A somewhat different development of criticism of the same sort led during the nineteenth century to a series of attempts to estimate the relative values of single subjects, of different curricula, of different forms of organization of subjects, and the validity of different immediate and remote results as educational objectives. These attempts have led in turn to the dropping of rigid prescription of courses and to a defense of the elective system.

In this section the value of critical discussions of curricula has been shown by pointing out (1) that critics are seers; (2) that the acceptance of constructive criticism has accompanied and apparently led to the great periods of educational advancement; (3) that the vital importance of secondary education requires the guidance of competent critics in planning progressive changes; (4) that significant modern issues have been envisaged, analyzed, and, in some cases, solved by critics; and (5) that progress depends upon recurrent consideration of sound criticism. Additional modern issues which have been analyzed by critics will next be cited.

Educational attitudes and conditions which provoke criticism. At least five purposes or forms of desire appear to have instigated criticism of secondary-school curricula. First, there is the desire to adhere to the old — the tested and somewhat satisfactory formulæ. This desire is exemplified abundantly in the later Greek and the later Roman periods and in each succeeding period. Certain characteristics give this desire great strength: it usually exists in combination with other tendencies and attitudes which indicate the stability of its defenders; it is fused with vested interests in subject matter — an element in the thinking of many teachers of well-established subject matter; institutional life is usually organized in conformity with the old; reverence for the old — the stable; it is cherished by respectable persons; and it often indicates a high degree of affluence. The contributions of this desire have been varied and numerous: it seems to have hastened the death of two great martyr-teachers among the Greeks and the Hebrews; it checked Greek learning in Rome; it retarded development during the Middle Ages; it has prompted the burning of many scientific manuscripts; it prevented the interrelationship of the labors of advancing workers of the Middle Ages; it prolonged absurdly the period of adherence to Aristotle; it blocked experimental study and teaching for centuries; it has perpetuated much subject matter long after the need for it passed; and it has perpetuated much desirable subject matter.

Second, there is the desire to make education practical. This desire has led to many later innovations since the days when it prompted Korax to invent the art of rhetoric and Gerbert to use Arabic numerals. It has been characterized by a spirit of utility; by an emphasis upon ready-made answers and processes rather than upon underlying basic

principles; by impatience with subject matter that is alleged to be mainly cultural; by arguments designed to show the cultural values of the practical; and by a lack of fundamental philosophical principles such as Dewey has supplied. The contributions of this desire include the encouragement, since the later Greek period, of the immediately practical at the expense of broad training; the popularization of education; the adoption of Arabic notation; the development of new subjects throughout modern times; the connection of schools with current life; and the development of the functional attitude toward all subject matter.

Third, there is the desire to make education cultural. Plato, Erasmus, Milton, Herbart, Jebb, Huxley, Arnold, and Bryce are notable adherents to this cause. Among the characteristics of this type of thought are frequent confusion about the meaning of the term *culture* and valiant efforts to define it; periodical defenses of certain studies for their cultural values; impracticality — as viewed by the "practical"-minded; attempts to measure cultural values by measuring the concomitants of such values; and a dignified, leisure-class attitude. The contributions of this desire include attempts to teach subjects for certain "higher" values; the encouragement of fine writing on educational subjects; the preservation of fine literature; an excessive emphasis upon literary values; a heightened tone of instruction; and an interest in well-organized subject matter. The last-named contribution is sometimes accompanied by a naïve belief that new subject matter lacks cultural possibilities because it lacks good organization.

Fourth, there is the desire to cultivate certain traits of character, such as morality, religious attitude, courage, patriotism, and strong mental fiber. This age-old desire has, at times, been accompanied by such undesirable character-

istics as an extreme tendency toward didacticism; a failure to recognize pupils, equipment, interests, and needs, and a consequent intrusion of an overmature, adult point of view in the selection of subject matter; an overemphasis upon the views of certain leaders; and a consequent distortion of subject matter by misguided partisans. The contribution of this desire, when it is accompanied by recognition of the nature of the learning process, includes whatever of worth there is in the employment of wholesome subject matter. Under the guidance of untrained partisans, this desire has contributed to the neglect, for centuries, of important bodies of knowledge; to the development of overmature, moralizing forms of subject matter; and to a retroactive tendency toward mental disciplinary values and the attendant verbalism of that tendency.

Fifth, there is the desire to improve the subjects pursued at any given time. This desire assumes many forms by including attempts to improve the methods of teaching, the organization of subject matter, and the planning of suitable pupil-activities. The noblest educators of all times have been impelled by this motive: Isocrates, Plato, Aristotle, Quintilian, Comenius, Descartes, Eliot, and a host of modern reconstructionists. This desire has been characterized by an attempt to find the roads of the past and leave the ruts; by wholesome conservatism; by intelligent leadership; by the application of progressive philosophy, psychology, and sociology to education; by attempts to improve teachers systematically; and by using the best available means for measuring educational values and results. The positive contributions of this desire are the stabilization of content — not always a desirable result; a heightened value of subjects by virtue of vital organization; an improvement of the technique of teaching; the gradual elimination of

undesirable subject matter; an emphasis upon individual needs; the attempts to extend educational opportunity to larger and larger groups of persons; and a realization that each age must provide its own organization of education and that subject matter must be winnowed anew for each new set of conditions.

Educational reforms proposed by critics. Out of these five types of reasons for criticizing curricula constructively, have developed five principal types of educational reforms. The following account provides a brief historical summary of these reforms.

Owing to the tendency to adhere to the old, Socrates and Isocrates attempted to show the youth of Greece that the short and superficial courses offered by other teachers were based not upon facts and sound judgments but upon opinions and that such courses could lead only to specious results. These critics alleged that departure from a solid body of knowledge which required years for its mastery could not safely be undertaken by any youth who was destined to lead his people. The same tendency reappears at times in the proposals of critics and at times in workers who only imply their attitudes by attempting to make scholarly compilations of established subject matter. In these forms, the tendency is exemplified by Seneca's reverence for the older learning when he thought of it in comparison with the new learning of his later years, by Quintilian's account of what he believed to be an adequate curriculum, by Varro, St. Augustine, Capella, Donatus, Priscian, and others who formulated the subject matter of the Middle Ages, by mediæval translators of early manuscripts, by Petrarch and other humanists, by Comenius, and by scores of protagonists of ancient learning and established curricula in modern times. At times, this tendency has encouraged progress by showing

the soundness and applicability of the old to the present. At other times, it has stifled progress by allowing ancient lore to monopolize the time of scholars. The history of education provides an ample defense for a temperate use of this tendency and also ample evidence against overindulgence of it.

Owing to the tendency to make education immediately practical, the superficial teachers of Greece came near overthrowing the ancient learning of the old Greek period. Again in Rome the same superficial critics prevailed to the same end. In the Middle Ages the commercial teachers advanced their cause by proclaiming the unwisdom of the scholars and by advertising courses which would yield great returns after short study. Out of the same tendency grew the advocacy of practical schools for worldly men in early modern France and Germany. Later, England and, under Franklin's leadership, America advanced practical reasons for reducing the amounts of certain types of content and increasing the amounts of other types. During the nineteenth and twentieth centuries Combe, Spencer, Eliot, and Dewey have advocated practical subjects and have rationalized the arguments for the thorough study of such subjects. It is to be understood that the subject matter of practical courses has developed into large, rational bodies of content and that modern advocacy of such content is very unlike the advocacy of ancient and mediæval practical courses. Concomitants of the tendency to criticize curricula for their neglect of practical content have been the development of rhetoric, public speaking, commercial subjects, science, mathematics, and the teaching of modern languages. While all these branches have been benefited by practical demands, other demands and tendencies have, of course, been operative. It should, however, be clear that many subjects which

are at present pursued by many pupils for their cultural value were in earlier times championed chiefly by persons whom scholars rated as illiberal.

Owing to the tendency to emphasize cultural aspects of education, many formalities have been fostered and many values which modern men regard as cultural have, as just stated, been rated as lacking in cultural qualities. Instead of agreeing with the saying of Matthew Arnold that culture is an acquaintance with "the best that has been known and said," many defenders of culture have restricted this term to the best that has been known or said about only certain matters or by only certain persons. Dewey's account of the broadened scope of the term culture shows that its earlier restricted use grew out of ancient social conditions, the lack of organized content in certain departments of thought, and the force of tradition in maintaining a *status quo*.[1] If one examines the works referred to above in the discussion of humanism and realism, one finds that the modern works on education emphasize the three aspects of culture named by Matthew Arnold: (1) a richness of dynamic mental attitude instead of dependence upon external and mechanical appliances; (2) an harmonious mental perspective instead of a narrow view limited to a single pursuit or mental set; and (3) a dynamic social perspective which leads to general social advancement instead of only selfish purposes.[2] This attitude, when compared with the literary humanist's attempt to confine culture to *belles lettres* as Arnold himself seems to have done in certain passages, discloses many of the reasons for misunderstanding the meaning of the term *culture:* different writers have limited the term to different aspects of culture. Modern writers, in accepting Arnold's

[1] *Democracy and Education.* Chapters XIX–XX.
[2] Cf. his discussion of culture in *Discourses in America,* pp. 76–92.

broad tripartite conception, are able to show the cultural value of all substantial and well-organized content. By accepting this conception, the old distinction between the terms practical and cultural disappears.[1]

Out of the desire to cultivate moral traits by education has grown criticism of content from primitive times to the present day. Crises in tribal or national life seem to have led to curriculum revision to improve the moral fiber of youth. Cosmopolitan Athens, for example, like modern America, had to choose from many available sources the content which should be taught to adolescents. Isocrates urged the moral values of his broad curriculum, while Plato classified different items of content as to their moral values. St. Augustine and many other of his mediæval successors made moral and religious values the chief consideration in their discussions of curricula. In modern times, the founders of great school systems — Sturm, Colet, Erasmus, and Franklin — attended critically to character education. Nineteenth-century writers, such as Dickens, Carlyle, Ruskin, and Herbart, formulated principles of moral training which were identified at the close of that century with the agitation for the correlation of subject matter. The last decade has witnessed an extension of the term moral education to include social or civic education. The alleged failure of schools to provide adequate training of this kind has led to a deluge of criticism by such educators as Adler, Sadler, Bobbitt, Charters, O'Shea, Dewey, Sharp, Sisson, and Judd. As a direct result of this criticism, an inventory of social education has been made and this training has been increased and systematized. Paralleling the attempts to cultivate desirable traits of character, there have been attempts

[1] See also E. P. Cubberley, *Changing Conceptions of Education.* Houghton Mifflin Company, 1909.

to analyze pupils to discover their capacities, interests, and needs. Plato and Aristotle conducted extended philosophical investigations upon this point, as did Vives, Comenius, Dury, and also the scores of modern students of child psychology during the last century. Criticisms of subject matter for its failure to conform with child nature have played an important rôle in the reconstruction of curricula.

Out of the desire to improve the traditional subjects have come criticisms throughout history. The avowed aim of critics who would improve existing subjects is to utilize the best available knowledge in the respective departments of learning. The constant implication of this branch of criticism is that the critic is ages ahead of the masses and that the masses jointly or severally are sworn to thwart him. This group of critics seem originally to have been inspired by the battle of intelligent realism against superstition and traditional lore. Certainly from the time that Thales called upon his people to use the revelations of science and turn their backs upon outgrown beliefs and practices, tradition and advanced knowledge have been at war. Protagoras and Socrates pleaded with their contemporaries to abandon mere opinion and follow reason. Plato pleaded for the abandonment of unworthy literature and music and the cultivation of literary and musical activities which might advance the learner. Aristotle pleaded for real experience as the touchstone of beliefs and practices. Like Roger Bacon, Aristotle urged the abandonment of opinionated arguments after scientific data had been assembled. Adelard would have had students pursue existing bodies of knowledge, but still would not have had them led as by a halter in the pursuit of learning. In turn, as knowledge grew, critics turned upon one another as Grosseteste and Ramus did upon Aristotle, and thereafter reached a new level of curriculum making; for there

has been a continuous need to break down complacency and bigotry whether it has applied to superstition or to early science itself. In this attack upon complacency, it is significant that although many conservatists have been fortified by allying themselves with powerful institutions, critics have not entirely lacked the fortifying encouragement of the church; as examples, Aquinas, tolerant of research, and Bacon, a research worker of the thirteenth century, were, during their most productive periods, encouraged and protected by the church.

It is by this branch of criticism that the modern era was brought forth, and by it also that the modern era has continued to progress. Later mediæval and early modern scientists sought not to wreck existing systems of knowledge, but instead to extend these systems. By so conducting their campaign, they slowly built the basis for modern science. Petrarch and Boccaccio were not destroyers of existing subjects of study, but instead they enriched such subjects. As rapidly as the advances made by one generation or era of workers are either surpassed or formalized by later workers, the diagnostic criticism of Francis Bacon has to be applied. For example, before Bacon's time, Erasmus and Comenius proposed substitutes for the diseases of the learning of their day. To science, modern critics, such as Spencer, Huxley, Eliot, Bode, and Flexner, have again applied criticisms of the diseases, humors, and phantoms of modern learning. All criticisms of this type aim at the preservation of the good elements in the old materials, while advancing toward the new, better use of old materials, and more effective organization of an entire department of learning.

Always, however, there has arisen an insuperable obstacle to immediate and full success in the improvement of existing subjects of study. This is the obstacle which Robinson has

emphasized. Our curricula are, he says, "an unconscious avoidance of the responsibility which would be involved in really turning a stream of fresh and free thought upon our stock notions and habits. *We are not yet in a position so to revise our education that a new type of mind will be cultivated appropriate to our present knowledge and circumstances.*" [1] The reasons for this inability to conduct a complete revision of subject matter are (1) that ancient, tested knowledge is, to many persons, preferable to new knowledge, and (2) that new knowledge is sometimes upsetting if applied to established usages. This antagonism between reconstructionists and conservatives sometimes applies either to a reorganization of the old, as in many of the revivals of the classics, or to the entrance of new materials into old departments. Upon this point the curriculum maker must decide whether knowledge will gain or lose by attempts to take any given progressive step; he must recall that the critic is a frontier thinker and that a reaction to certain critical views is still as inevitable as it was in the days of Socrates or of Galileo. He must recall that social attitudes as well as advancements in research are elements which may thwart or foster progressive tendencies. Ultimately, each reform that is carried to fruition gains the sanction of "respectable" persons. If such sanction can precede the introduction of new knowledge into the curriculum, there is an obvious advantage for the elements of knowledge in question. If, however, sanction must wait upon the adoption of new knowledge by curriculum makers, it is equally obvious that curriculum makers must in this case have the courage to face martyrdom.

How to meet the problems raised by critics. Up to this point this treatise has attempted to present many of the

[1] *Humanizing of Knowledge.* Doran, 1923. Pp. 64–65. See also pp. 47–69 of that volume for an excellent treatment of the curriculum maker's problems.

important and fundamental curriculum problems of the present day and to provide a background for discussions of these problems. The five subsequent sections of this book present discussions of attempts to meet such problems: (1) educational objectives and curricula; (2) pupils' equipment, interests, and needs in relation to curricula; (3) curricula and local conditions; (4) the reconstruction of curricula to provide for the best possible pupil activities in the mastery of subject matter; and (5) a study of present-day practices as a final guide in formulating standards for constructing and administering curricula.

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PART III

EDUCATIONAL OBJECTIVES AND CURRICULUM VALUES

CHAPTER IX

THE OBJECTIVES OF MODERN SECONDARY EDUCATION

The place of objectives in a system of education. The educational issues raised in the preceding surveys of historical development and constructive criticism challenge serious thought. Only when one recalls the fact that from the beginning of time scores of traditions have withstood each proposal for change, that millions of dissenters from progressive thought have risen to confound each critic of his times — only then can one apprehend the tremendous need for standards which point out the truth. If at last in modern times these standards or criteria can be arranged and then reduced to order, our generation of men may yet hope to solve problems which have persisted through the ages. Without such guiding principles, America's schools are bound nowhere; they will drift asea like a mutineers' ship. For Plato described accurately the condition of American education in the story of an artless captain and his men:

> Imagine then a fleet or a ship in which there is a captain who is taller and stronger than any of the crew, but he is a little deaf and has a similar infirmity in sight, and his knowledge of navigation is not much better. The sailors are quarrelling with one another about the steering — every one is of opinion that he has a right to steer, though he has never learned the art of navigation and cannot tell who taught him or when he learned, and will further assert that it cannot be taught, and they are ready to cut in pieces any one who says the contrary. They throng about the captain, begging and praying him to commit the helm to them; and if at

any time they do not prevail, but others are preferred to them, they kill the others or throw them overboard, and having first chained up the noble captain's senses with drink or some narcotic drug, they mutiny and take possession of the ship and make free with the stores; thus, eating and drinking, they proceed on their voyage in such manner as might be expected of them. Him who is their partisan and cleverly aids them in their plot for getting the ship out of the captain's hands into their own whether by force or persuasion, they compliment with the name of sailor, pilot, able seaman, and abuse the other sort of man, whom they call a good-for-nothing; but that the true pilot must pay attention to the year and seasons and sky and stars and winds, and whatever else belongs to his art, if he intends to be really qualified for the command of a ship, and that he must and will be the steerer, whether other people like it or not — the possibility of this union of authority with the steerer's art has never seriously entered into their thoughts or been made a part of their calling.[1]

The pilot of our schools may not assume command, "whether other people like or not," but that this "true pilot must pay attention to the year and seasons and sky and stars and winds, and whatever else belongs to his art, if he intends to be really qualified for the command of a ship," is indisputable.

No less discerning of the true place of clear objectives in the system of education was Erasmus when he exclaimed:

Tell me, can a man run his best in the dark? Or, can a gladiator conquer if he be blindfolded? The precepts of philosophy — which is knowledge applied to life — are, as it were, the eyes of the mind, and lighten us to the consciousness of what we may do and may not do. A long and manifold experience is beyond doubt, of great profit, but only to such as by the wisdom of learning have acquired an intelligent and informed judgment. Besides, philosophy teaches us more in one year than our own individual experience can teach us in thirty, and its teaching carries none of the

[1] *The Republic.* Oxford University Press, 1908. Trans. by Benjamin Jowett. 488B–489.

risks which the method of learning by experience of necessity brings with it.[1]

The results of running in the dark, battling while hoodwinked, acquiring experience while neglecting theory, are nowhere better set forth than in Judd's discussion of the American experiment in secondary education.[2] There, Judd cites the indifference of the American people to a real "insight into the essentials of their democracy." And, as this writer shows, even a well-planned school may fail unless the "true pilot" share his art and his philosophy with the "other people." For:

> What education is, and how the young should be educated, are questions that require discussion. At present there is a difference of opinion as to the subjects which should be taught; for men are by no means in accord as to what the young should learn, whether they aim at virtue or at getting the best out of life. Neither is it clear whether education is more concerned with intellect or character. And the question is brought no nearer solution by reference to the actual practice of contemporary education. Therefore no one knows whether the young should exercise themselves in those studies which are useful in life, or in those which tend towards virtue, or in those of essentially theoretical interest. All these opinions have found supporters. Furthermore, there is no agreement as to the means of cultivating virtue; for different people, starting from different conceptions of the virtue which all respect, naturally differ as to how the practice of it should be cultivated.[3]

The purpose of Part III of this treatise is to canvass and classify the literature of educational objectives with a view to relating these objectives to curriculum practices. Before

[1] *Concerning the Education of Children*, 497ff. Here quoted from Woodward's translation in his *Desiderius Erasmus Concerning the Aim and Methods of Education*, Cambridge University Press, 1904. Pp. 191–192.

[2] *School Review*, XXIX, 94–105. 1921. Reprinted in W. L. Uhl, *Principles of Secondary Education*, Silver, Burdett & Company, 1925. Pp. 3–9.

[3] Aristotle. *Politics*, V, viii, 2.

the derivation or the types of objectives are discussed, it is essential that certain distinctions of terms be made.

Important distinctions to be observed in the discussion of educational objectives. The philosophy of education is often confused by the cloudy connotations of certain terms and by a failure to recognize the interrelationships of certain complex processes.

1. *Value.* The term *value* signifies an observed or imagined condition which is either useful or leads to or produces something useful. By *useful*

> is meant that property in any object, whereby it tends to produce benefit, advantage, pleasure, good, or happiness, (all this in the present case comes to the same thing) or (what again comes to the same thing) to prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered: if that party be the community in general, then the happiness of the community: if a particular individual, then the happiness of that individual.[1]

This term may, therefore, indicate a condition which will become for a community or an individual, a standard of value. As such, an object of value possesses regulative characteristics which influence but do not necessarily determine conduct. Before an object of value can become an element in the production of action, it must ally itself with certain forces. For example, an efficient automobile is an object of value to most pedestrians; still, one does not therefore immediately obtain an automobile unless certain forces ally themselves with the notion of value in such a way as to produce desire. Of the forces involved in this particular case, the economic forces are often the most difficult to manage. Other forces, such as physical and psychological, are readily directed toward the possession of an automobile. In other

[1] Jeremy Bentham's definition of utility in his *An Introduction to the Principles of Morals and Legislation.* Clarendon Press, 1879. P. 2.

instances, moral forces are necessary for action with reference to an object of value: in the case of one who resists any form of temptation, there is an appreciation of the value of the tempting object, but there is a higher appreciation of an object which lies in a direction indicated by moral forces. These forces — economic, physical, psychological, and moral — serve as allies in giving motive power to values: every object of value, if attained, must have its parallel cause or force which leads to action.

The great importance of this point is illustrated in secondary education by the "cardinal principles" which were handed down by the commission on reorganization of secondary education in 1918.[1] These principles were largely names of values, and consequently they could not become causes of action until they were given motive power by association with forces which lead to action. "Worthy home-membership" and "ethical character" are among the values there set up, but these terms cannot stand for compelling forces or causes of action. They are merely names of abstract values drawn from instead of associated with the objects and activities which one performs and thinks about. Only after these values were supplemented by further analysis and then allied with economic, physical, psychological, or moral forces could they become causes of action.[2]

2. *Ideal.* The term *ideal* signifies a value which is accepted as desirable of attainment. The conscious action of acceptance of the notion of desirable attainability distinguishes an ideal from a value. The worth of an object of value is here realized and to that realization is added the element of desire or wishing. An ideal has, therefore, power to cause

[1] United States Bureau of Education, *Bulletin*, 1918, No. 35.

[2] Cf. W. W. Charters, *Curriculum Construction*. The Macmillan Company, 1923, p. 9. Dr. Charters there and elsewhere indicated the same difficulty in other formulations of "principles."

action on account of the element of desire as a moving force.

This desire is of course dependent for its fruition upon the four types of forces named above in the discussion of value. Owing, however, to a possible conflict of tendencies or wishes, an ideal is not a certain cause of action — knowing or even wishing does not always lead to performance. There are on record many cases of both individuals and communities in which holy ideals have run amuck because of the greater power of counter and baser ideals. Educators may not, therefore, be satisfied by the acceptance of such ideals as universal education or of command of fundamental processes of school subjects. Instead, they must further require that counteracting ideals be subordinated to the attainment of ideals which are believed to be socially justifiable. Every ideal, to be effective, must possess a dominant, parallel cause for action throughout the period of its supremacy.

In educational matters an accepted proficiency in purposes and performances may be adopted as a practical or attainable ideal. Character in general, as well as specific performance traits, stands within the scope of ideals. It is to be expected that certain standards of proficiency in purposes or performances lie far beyond the field of distinct vision and are, therefore, only dimly envisaged ideals. It is believed that by referring to ideals as definite proficiencies a much closer union of ideals and their attainments can be formed than is probable if ideals are referred to as indefinite, dimly apprehended, general traits.

3. *Objective.* The term *objective* signifies a value or an element of a value which is set up for attainment together with plans for appropriate activities for the attainment of the value. An objective thus serves as both guide and prompter to action. With reference to any given value

there may be one objective or many integrated objectives. When many objectives are integrated, the basis of integration is a recognized social or individual good of too complex a character to be attained as a single simple objective. For example, the ability to spell can be set up as a worthy attainment. But until this ability was analyzed with reference to social needs and individual pupil capacities, no useful working objective was derived. Recently, however, analysis of this ability has led educators to envisage social demands for spelling and the separate activities which pertain to proficiency in spelling. The results of thus objectifying this fundamental process are to be found in the reconstructed methods and materials of spelling in a modern school. Similar instances could be cited in the case of other school subjects.

The term will be used in this treatise as generally synonymous with the terms aim, end, or goal. As ideals result from the acceptance of values as desirable of attainment, so objectives result from definitely setting up ideals as objects of attainment together with plans for this attainment.

How the objectives of education can be derived. The objectives of education are derived by observation and analysis of and speculation upon human activities, interests, needs, and capacities. Plato, Erasmus, Rousseau, and Spencer as well as more recent educationists, have followed this procedure. The differences among their ultimate objectives are due usually to differences in the character of the observation, analysis, and speculation employed and the amounts of attention given to activities, interests, and capacities rather than to differences in the activities, interests, and capacities considered. In order to illustrate different procedures in the derivation of objectives, a brief survey will next be made of the use of seven different approaches to the formulation

of objectives. In this survey certain characteristics or predominant points of departure in the work of different men will be employed as examples.

1. *The derivation of objectives from an ideal form of society.* It will be recalled that Plato wished his philosopher or educated man to be so trained that three characteristics of the soul should be properly tempered and nurtured.[1] His speculation upon and analysis of this matter led him to complete his objectives by examining existing subject matter and making suggestions for its use. The values and ideals which underlie his objectives were hypothetical rather than real, and, consequently, his plans for accomplishment were also marked by their indefiniteness. It is plain that Plato's objectives of education grew out of the discrepancy which he observed between society as he thought it should be and society as it was in his day. Since the picture which he drew in his *Republic* of this hypothetical society provided the general basis of his plans, Plato's objectives lacked the close relationship to actual performances and conditions that is possessed by later formulations.

2. *The derivation of objectives by analysis of "good character."* Erasmus attempted in his *De Civilitate Morum* to derive an integrated system of objectives looking toward organized life in a civilized, enlightened community. His general objective of education was social efficiency which included piety, scholarship, or love for and proficiency in liberal studies, the general duties of life, and skill in civic affairs.[2] These four aspects of social life were distinguished from one another only for purposes of discussion and curriculum planning. In actual life they are, as Erasmus saw, inseparable. With reference to each of his four subordinate aims, he examined life: religious institutions, the family,

[1] See p. 214. [2] *Op.* i, p. 1033 B-C.

the community, and certain vocations — the Church, landownership and diplomacy. In this examination, he found certain characteristics many of which, in his opinion, necessitated formal training of the young. As the individuals about whom Erasmus showed most educational concern were of the sort whom Plato expected to develop into "philosophers," the plan of Erasmus has serious limitations in an age of universal education. Although he analyzed subject matter with considerable care, he suffered serious limitations in this also because he confined his curriculum entirely to classical literature. A superficial survey of a state or a community with the present-day point of view would have yielded numerous items, such as training for everyone who was engaged in many of the activities which Erasmus quite overlooked. His assumption was that the world had changed so little since the classical days of Greece and Rome that all educational nurture could be derived from the works of those days with the addition of the materials of religious education.[1]

3. *The derivation of objectives by analysis of one class of individuals.* Castiglione derived the essential objectives for a liberal education by observing and analyzing the lives of men who succeeded in the court life of his day. So well did Castiglione analyze the life of his day that his book, *The Courtier,* has been cited as the fullest account in any single volume of "the chief moral and social ideas of the age." [2] As a result of his analysis, he included objectives in conversation, arms, literature, music, drawing, painting, sculpture, and manners. Other subjects, such as manual arts and science, he quite neglected. If this omission of certain

[1] See W. H. Woodward's *Desiderius Erasmus Concerning the Aim and Method of Education.*

[2] Raleigh, Walter, in preface to translation of *The Book of the Courtier.* David Nutt, 1900.

subject matter is charged as a limitation of Castiglione's book, one should charge the limitation to the scope of his analysis rather than to his treatment of the courtier's needs. For the scope of this analysis was limited by the scope of this writer's notion of a liberal life. As his notion of a liberal life excluded the greater part of human beings, his work has little general application in a democracy.

4. *The derivation of objectives by analysis of the nature of children.* Rousseau, while setting up as objectives the attainment of both social and individual values, looked to the nature of children rather than to the nature of society as a source of educational objectives. His hope was that society might become adjusted to nature. When parents and teachers learned "the art of forming men" according to the child's nature, then, he believed, there could be developed a society which was also natural. By challenging the emphasis in education upon adult standards and by setting up instead the nature of the child, Rousseau called the attention of educators to objectives which have influenced and still are influencing the organization of teaching materials. Despite the notable contribution of Rousseau's procedure, it led to a search for objectives in a place where they can not be found. Children's tendencies and interests, unless largely formed or guided with reference to adult standards, lead only to primitive savagery. Rousseau failed to outline a satisfactory system of objectives because the elements of his analysis remained unreconciled. Had he analyzed the child and society and then united into a consistent system the results of his analysis, he might have reconciled the two conflicting elements, child nature and adult society. Instead of reconciling these elements, he decided in favor of child nature, and as a consequence involved himself in confusion regarding the basic conditions of education.

5. *The derivation of objectives by special reference to a certain branch of knowledge.* Although Herbert Spencer set up "complete living" as the objective of enlightened man and seems in the *Data of Ethics* and a portion of his first essay on education to be analyzing educational problems with that objective in view, classicists have been certain that Spencer's real motive for writing his essay entitled "What Knowledge Is of Most Worth?" was that of proving the superiority of science over letters. By most readers it will be granted that Spencer was an ardent protagonist of science and that he was an almost equally ardent denouncer of the practice of exalting literary studies above the sciences. Unfortunately, Spencer analyzed the values of science only partially and left much undone with respect to certain social studies which he also favored. A more complete analysis of science would have shown Spencer that the different elements of science are very uneven in value to one who is living a reasonably complete life. His failure in this respect to distinguish between the items of knowledge which are indispensable to the specialist and of slight value to the layman is perhaps as great a fault as any in his analysis. His lack of success in deriving objectives which are adapted to the complete living of persons with literary or artistic inclinations and somewhat deficient in interest in scientific knowledge is a serious reflection upon his own great scientific powers.

6. *The derivation of objectives by analysis of sociological values.* Although many writers since the time of Plato have emphasized social and political needs as determinants of education, recent emphasis upon a new social determinant and educational objective dates from the present century and found an early advocate in Small. This new social objective is characterized by an attempt to connect all educa-

tion with democracy.[1] Small insists that both society and culture have changed since "the old aristocratic ideal of culture" was adopted, and that the change requires that less time be given to the old literary humanities and more weight placed "upon preparation for efficiency and service. The scientific method, broad concepts, and higher appreciations must," he continues, "ever be the foundations of citizenship and of practical activities; but a larger proportion of time must be given to the vocational aims" [2] That is, education must enable man not only to be familiar with his environment as reflected in science and letters, but also to "develop original power to change the environment and to cope with whatever problems of efficiency and ethical conditions a given period may present." [3] In elaborating upon the attainment of sociological progress, Smith analyzed four aims of education — the development of physical vitality, of cultural attainment, of vocational efficiency, and of social service. He found sound reasons for bringing about a realization of all four of these aims by society in general as well as by a few individuals selected upon an economic basis; and he also showed the need for social hygiene as well as for individual health, "for social æsthetics, social self-control, and social ethics as well as for individual artists, individual self-control, and personal morals, the value of vocational responsiveness and idealism as well as of vocational efficiency, and the superiority of organized social service inspired by group loyalty over egocentric social service inspired by individual impulse and ambition." [4]

[1] See Albion W. Small in the *Report of the Committee of the National Council of Education on Economy of Time in Education.* United States Bureau of Education *Bulletin,* 1913, No. 38. The portion to which reference is here made is in W. L. Uhl, *Principles of Secondary Education,* pp. 484f.

[2] Here quoted from Uhl, *op. cit.,* p. 484.

[3] *Ibid.,* p. 484.

[4] *Ibid.,* pp. 594–604.

7. *The derivation of objectives by activity analysis.* The derivation of the objectives of education by a detailed analysis of the activities required by contemporary society is exemplified by the work of Bobbitt and Charters. This procedure in the determination of objectives looks rather to the needs for certain items of knowledge, skill, and attitudes, in everyday life than to the assembled bodies of traditional subject matter. Among these needs are found many specific types of objectives which can be classified into more general types. Bobbitt, for example, finds that ten general objectives subsume the specific objectives which he has discovered. These ten objectives are:

1. Language activities or social intercommunication.
2. Health activities.
3. Citizenship activities.
4. General social activities.
5. Spare-time activities.
6. Keeping one's self mentally fit.
7. Religious activities.
8. Parental activities.
9. Unspecialized or nonvocational practical activities.
10. Vocational activities.[1]

Unlike the general objectives of earlier philosophers of education, these objectives grow out of the hundreds of specific objectives which are to be employed in the application of these ten larger objectives. Earlier philosophers, it is true, analyzed society, but they failed to recognize the need for more than a general view of society. Also in contrast with such a general approach, Charters has employed investigators to engage in occupations for the purpose of determining the details of abilities needed by those occupations.[2] When

[1] *How to Make a Curriculum.* Houghton Mifflin Company, 1924. Pp. 8–9.
[2] Charters, W. W. *Analysis of Secretarial Duties and Traits.* Williams and Wilkins Company, 1924.

this method is used in such a manner as to indicate in detail the demands which are to be made upon the products of the school and the possibilities for further developments in occupational and nonoccupational activities, and when all this material is interpreted from the sociological point of view, this method seems to bear a close analogy to that of the manufacturer who, before deciding upon what and how much to produce, first surveys carefully the marketing conditions for his commodity. In thus canvassing each important life activity, one who follows this method closely resembles the biologist who collects and analyzes one after another of the members of each important biological category. Another elaboration of this procedure in the case of the social studies is found in the work of Rugg and Hockett.[1] This elaboration consists of a comprehensive examination of society through the writings of specialists — frontier thinkers — in the major activities of human life and in children's interests and capacities.

The fact that one may, by this plan, discover a multitude of important gross activities which can be analyzed into an even greater multitude of specific activities has been a source of grave annoyance to many educators. Owing to a lack either of careful attention to the real character of these specific objectives or else of the ability to classify data as all scientists have classified their own data, these educators are disturbed lest major objectives be lost among minor specific objectives. Surely this situation must be full of humor to one who has followed the history of science! Imagine, for example, Linnæus in an analogous situation. Would he have decided, since there was such a multitude of unnumbered and unclassified plant specimens, that distinc-

[1] Rugg, Harold and Hockett, John. *Objective Studies in Map Location.* The Lincoln School of Teachers College, Columbia University, 1925.

tions between plants were, after all, of no consequence? As a matter of fact, science has not progressed by becoming disturbed in the presence of facts, whether few or many, whether neatly classified or in an apparently hopeless jumble. Instead, science has even welcomed the discovery of elements. It matters not one whit whether the field of a scientist is that of botany or that of education, he must at times avail himself of the power to magnify, study, classify, and interpret small, significant matters.

The foregoing survey of procedures of deriving educational objectives discloses seven approaches to the matter: (1) by way of an ideal form of society — the procedure of Plato; (2) by way of generally recognized good character — the procedure of Erasmus; (3) by way of one class of individuals — the procedure of Castiglione; (4) by way of the nature of children — the procedure of Rousseau; (5) by way of a certain branch of knowledge — the procedure of Spencer; (6) by way of sociological values — the procedure of Small and Smith; (7) by way of activity analysis — the procedure of Bobbitt, Charters, and Rugg and Hockett. It is, of course, to be understood that none of these philosophers of education have worked upon the sole basis of the procedure attributed to them. Although many of them have employed more than one of the seven bases, they can, nevertheless, be fairly characterized as exhibiting a predominant tendency, respectively, to employ the procedures named.

To one who seeks a procedure for deriving the educational objectives of a democracy, the shortcomings of certain procedures and the contributions of all procedures indicate the need for an eclectic policy. No one should, like Plato, pursue an ideal policy for his state so far as to lose sight of the immediate practical needs of the state and her people;

still, one may at times cast a wistful eye toward conditions which are far different from those about one. One should not, like Erasmus, be content with a general analysis of society and derive therefrom only such aims as are so general that they neither specify nor demand certain entities; still, the highly analytical specialist must not forget that a superabundance of trees sometimes obscures a greater vision of the forest as a whole. One should not, like Castiglione, confine one's objectives to the needs of a certain stratum of society; still, it should be recorded that this writer did one thing very well for his times. One should not, like Rousseau, attempt too largely to derive objectives from the nature of the person to be educated; still, there is hardly a department of knowledge which either has been or could profitably be reorganized with a view to meeting Rousseau's demands. One should not, like Spencer, be too deferential toward a given branch of knowledge; still, one must, at times, champion with the partisan's zeal a subject which organized societies of teachers ignore.

Out of the seven procedures for deriving educational objectives, there have come three principal types of objectives. First, there are general objectives like those of Erasmus which are integrated by an unanalyzed, alleged greatest good. Second, there are cardinal objectives like those of Spencer which grow out of a very general analysis of human life. Third, there are hierarchies of aims like those of Bobbitt and Charters which grow out of an analysis of human life into specific activities. These three types of objectives are, as has already been shown, the direct outgrowth of different approaches to an analysis of human life. The first and second of these types of objectives have been employed in behalf of theological views, encyclopedism, general utilitarianism, and other special or general postu-

lates. Such objectives are, therefore, to education as the philosophical postulates of ancient scientists are to science. But science no longer opens an investigation by setting up an alleged "essence" of the object to be investigated; instead science looks to the object itself to discover its character. True it is, that science adopts hypotheses as guides and then proceeds to an evaluation of them in terms of the data derived from an investigation. But if the hypotheses disagree with or fail to embrace the findings of observation and experimentation, the hypotheses are discarded or enlarged. By following this practice for four hundred years, science has discovered and systematized more than was accomplished in the preceding four thousand years.

Education can profit by the example of science. By adopting the pattern of science, education need not be deprived of the guidance of any fundamental principles which point out the goal or goals of human existence. But education must not permit such goals to blind students to the necessity of analyzing life realistically and at first-hand. If after such an analysis the data obtained can be systematized into hierarchies and subsumed by such terms as Bobbitt uses, the data can then be readily employed in formulating practical objectives. Education must abandon the practice, long obsolete in science, of relying solely upon easily found traditional values as guides in the educational process. Like scientific progress in general, educational progress grows out of experimental study combined with sound principles of scientific procedure. That is, a science of education can develop only from (1) analytical and accurate observations of the elements which are related to education, (2) logical formulations of the results of such observations, and (3) interpretation and integration of the results so as to show the meaning and significance of such

formulations of results. This scientific procedure opens to educational investigation the method of other sciences and, in the process of interpreting and integrating the results of investigation, makes use of all valuable philosophy of education.

In short, the modern philosopher of education must envisage society, men's activities, human interests, human capacities, growing departments of knowledge, and facilities for guiding adolescents toward the world of modern man. As a result of their attempts so to view modern life, contemporary students have already revealed educational problems which cry out for such perseverance, subtlety, intensity of effort, and command of investigative resources as can be found only in the most heroic professional efforts of technicians. Here are required soundness of logic, breadth of experience, and thorough investigations of society, schools, and subject matter. When this program is followed, the derivation of objectives will consist of (1) an investigation of human society which is conducted specifically and comprehensively enough to cover definitely all important aspects of society; (2) a classification of the results of such an investigation so as to facilitate thought about and discussion of them; and (3) interpretation of these results in terms of the philosophy of human life, subject matter, and all the educational facilities required for the attainment of the objectives so derived. Only by following such a program can curriculum makers derive adequate educational objectives.

A comprehensive formulation of objectives of education. Up to this point, our survey of the objectives of education has shown that values can be or have been derived by following any of the seven procedures which have been discussed. Fundamental reasons require, however, that certain of these procedures be abandoned and that certain

others be employed as far as present-day knowledge of human society will permit. That is, if the discussions of the methodology of deriving objectives are valid, further progress in the derivation of objectives can be made only by analysis of society. Such analysis can be made with reference to social activities and individual capacities, tendencies, and interests. The analyses which have already been made of these activities and conditions, insofar as they influence objectives, will, therefore, be canvassed.

1. *Analyses of social activities.* Activities which have social significance have been analyzed from five fairly distinct points of view. Some of these analyses have been attempted with reference to society as a whole, others with reference only to certain communities or occupations.

a. Analysis of Social Activities with Special Reference to Certain Communities. Two surveys conducted by the United States Bureau of Education illustrate analyses of social activities with special reference to certain communities.[1] The Elyria survey was conducted so as to discover (1) the occupations of parents of children in the Elyria high school, (2) the occupations which the pupils of that school plan to follow and the schools which they expect to enter, (3) the occupations pursued by older brothers and sisters of the pupils then in school, and (4) general industrial, civic, and recreational conditions of the city. The Wilmington survey included a somewhat more detailed analysis of the local industries. The special occupational needs of workers were obtained in statements from the workers and employers in certain industries. It appeared from the statements of workers that:

[1] *Educational Survey of Elyria, Ohio* and *Industrial Education in Wilmington, Delaware.* United States Bureau of Education *Bulletins*, 1918, Nos. 15 and 25. See reprinted portions of these surveys in W. L. Uhl, *Principles of Secondary Education.*

more drill in the common branches is desired for the boy before he leaves school and after he begins working at his trade both as apprentice and journeyman. Drafting and blueprint and plan-reading are demanded by a large number of the workers. Many other courses are suggested. Sanitation, cleanliness, and courtesy are suggested by several. A study of the industries and practical shopwork along a number of lines are suggested.[1]

The suggestions obtained from employers closely resemble those obtained from the workers. With this information in mind, the surveyors next analyzed the existing outline of objectives of the school courses with a view to relating the courses more closely "to the life and experiences of the children"[2]

b. Analysis of Social Activities with Reference to the Major Lines of Human Experience. Bobbitt, who has analyzed social activities with reference to the major lines of human experience, begins by analyzing activities and conditions, then proceeds to group the results into the broad range of experience within the ten large units previously named,[3] and next breaks these units into smaller ones. This process of analyzing, dividing, and subdividing is continued until the data of experience are reduced to manageable specific items. This procedure is adopted with the assumption that the term health activities, for example, represents too gross and unwieldy a portion of experience for use in curriculum planning. To say merely that health should be an objective of education is analogous to a traveler's saying, if he wishes to go to Waco, that Texas is his objective. Such a traveler may by chance arrive at El Paso and then be directed therefrom; he may even by chance arrive at San Marcos.

[1] *Op. cit.*, p. 64.

[2] See *op. cit.*, pp. 69ff. Numerous reports of other surveys exemplify this general method of analysis of local conditions.

[3] See p. 299.

In any given case, however, the traveler who is so indefinite in his itinerary is unlikely to be economical or efficient — a more efficient traveler would limit his objective and would also chart definitely a route thereto. Likewise, if health is desired one must not merely wave one's arms twelve times a day, but instead must chart definitely one's route to health by way, according to Bobbitt, of thirty-nine objectives of physical education, forty-two guiding principles, and an unnumbered throng of pupil activities and experiences of which twelve are catalogued.[1]

The derivation of these guide posts to health education were derived from an analysis of the activities, habits, and standards of physical behavior (1) of men and women who have been preëminent in their development and maintenance of a desirable physical condition, and (2) of persons who exhibit physical weakness, defects, and ailments. From these analyses of successes and failures, Bobbitt derives health objectives which he states in terms of the following abilities:

1. The controlling of one's dietary so that one's food contributes in maximum measure to physical well-being
2. The keeping of one's body properly oxygenated
3. The utilizing of physical exercise as a lifelong means of maintaining physical vitality.[2]

The relation of these specific objectives to the curriculum is clear: adequate physical education consists of developing correctly through appropriate physical activities and experiences. For example, this objective includes training in the right kinds of food activities during the growing years. As the ultimate performance of these correct food activities

[1] Bobbitt, Franklin. *How to Make a Curriculum.* Houghton Mifflin Company, 1924. Chapter X.
[2] *Ibid.*, p. 166.

must be self-directed, it is necessary that the training for their performance consist as completely as possible of impressive activities which will lead to permanent and satisfying habits. As food habits are variable and complex, the individual needs also technical information about foods. Three constituents of training — habits, attitudes, and technical information — enter, therefore, into the statement of this health objective. The same fundamental constituents are required for all other health objectives.

This program which demands training in the classroom and everywhere else in the community demands changes from the usual activities of physical education. A platform of guiding principles and assumptions is, therefore, formulated: training in physical activities is necessary for everyone; children have a long period of infancy in order that they may play; to become permanent, training activities must be enjoyable; the development of permanent habits is facilitated by activities and conditions similar to those habits which should operate in later life; and extensive reading of gripping materials will aid in the adequate understanding and visualizing of the conditions of healthful living.[1]

Furthermore, Bobbitt continues, there should probably be separate pupil activities planned for each separate health objective. As a beginning of such planning, general types of activities are suggested: the observation of examples — directly and by readings and pictures of desirable physical activities and qualities; the analysis of his own health conditions as a basis for individual improvement; and opportunity for a continuance of desirable habits.[2] Finally, after the formulation of general types of pupil activity has been completed, the objectives are to be taken one by one and reduced to specific activities. A similar procedure is to be followed

[1] *Ibid.*, pp. 170–174. [2] *Ibid.*, pp. 175–176.

in the formulation of the specific objectives of each of the other nine major lines of experience and provision made for each objective in pupil activities.

c. Analysis of Social Activities with Reference to Certain Institutional Organizations. The value of local institutional analyses in curriculum planning is emphasized in reports of such analyses as those of Lull.[1] By the term *institutions*, Lull refers to typical local business organizations, factories, public service companies, civic organizations, and so forth. The uses which are to be made of such analyses are tentatively stated as follows:

1. To develop and "round out" the experience gained by the pupils in their community contacts and participations.
2. To furnish a basis for the pupil's point of departure into the more remote experiences to be gained from the curriculum.
3. To give a practical answer to the question, "What ought the pupils of the junior high school to know about the community in which they live?"
4. To furnish the groundwork of experience necessary in the development of citizenship.
5. To furnish the information requisite for vocational guidance.
6. To furnish materials essential to the attainment of other objectives, such as health efficiency, leisure time efficiency, moral efficiency, home-making efficiency, etc.[2]

It is recognized that such analyses will not indicate the entire program of studies of schools and that three other limitations condition the usefulness of this procedure: "(1) the classes of institutions represented in the community, (2) the objectives set for the entire curriculum, (3) the adaptability of the institutional materials to the abilities of the pupils."[2]

[1] Lull, H. G. "Applying the Community's Educational Resources to the Curriculum." *Teaching*, No. 66. February, 1924.
[2] *Ibid.*, p. 3.

Although, the analyses which Lull reports were undertaken primarily to discover usable items of instructional content, the availability of the results of such analyses has an obvious relation to the formulation of specific objectives, provided, of course, that any of the pupils are likely either to live permanently in the community or to be employed in any of the institutions analyzed. For example, an analysis of a lumber and building materials company reveals facts under the following heads:

Purpose of the business.
Origin and development of the business.
Extent and kinds of service rendered by the business.
Financing the business.
The bookkeeping system.
Legal knowledge required by the business.
The demand for labor in this business.
Sources of labor supply in this business.
Different types of jobs in this business.
Training needed for the different types of work.
Standard of health required of an employé.
Personnel of employés.[1]

When these results are itemized and appropriate matter is placed in the course of study, specific objectives such as acquaintance with local industries and welfare associations are provided for. For example, Analysis No. 5 dealt with an automobile sales agency and garage; the appropriate items of this analysis are used for purposes of illustration and application in seven subjects which the pupils are pursuing in Grade VII.

d. Analysis of Social Activities Occupations. If detailed lists of duties of workers in various occupations were catalogued together with the proficiency demanded of workers

[1] *Op. cit.*, p. 27. This is only a partial outline of the analysis. Other items have a more remote relation to objectives than have the items here quoted.

in each task, such lists could be used in the formulation of the objectives of vocational courses leading to those occupations. A valuable analysis by Charters of secretarial duties and traits provides the beginning of such lists.[1] Fortunately for the timid persons who fear that a large number of specific objectives will upset their somewhat unstable skiffs, Charters explains the possible uses of his long lists: the materials may be of use, he believes, to employers, secretaries, vocational counsellors, and to teachers.

The commercial teacher will find this material of use in several ways:

(1) The traits serve as standards of performance to be demanded of the students. For instance, since accuracy is so important it is obvious that teachers must demand accuracy in everything that the student does. In like manner, they must see that the student develops dependability in all assignments that are made to her, and they must demand the use of intelligence in such tasks and situations as clearly call for this trait. It is definitely the duty of expert teachers to determine specifically what traits need to be considered in connection with each duty that is performed, and to so train the pupils by holding them to the proper standards that the trait will actually be developed in connection with those duties.

(2) The sympathetic commercial teacher can make a direct attack upon the traits by leading the students to see their importance and by helping them to develop those traits in which they are weak. For instance, he may strongly emphasize the importance of dependability and through these trait-actions and others, help the pupil to develop dependability. Obviously, it would be necessary for the careful teacher to add to the professional trait-actions which we

[1] Charters, W. W. *Summary of Report on Analysis of Secretarial Traits and Duties.* Service Bulletin No. 1. National Junior Personnel Service, N. Y. 1924. The complete report of Dr. Charters' analysis is published as *An Analysis of Secretarial Traits and Duties*, by Williams and Wilkins Company, Baltimore, 1924.

have listed, those which are found as an expression of the trait in the school environment.

It cannot be too strongly urged upon commercial teachers that the success of their students is as dependent upon traits of personality as upon efficiency in technical performance. Many excellent students in typewriting, stenography, bookkeeping, and filing, make egregious failures as stenographers and secretaries because of the lack of certain traits which are necessary in the position. Personality is of so much importance that its development cannot be left to chance, and it responds with such reasonable ease to treatment that the development of secretarial traits ought to be included in the curriculum of secretarial schools, both by indirect attack through all duties performed, and by direct attack upon specific weaknesses which are discovered.[1]

Charters made his analysis of secretarial duties and traits by employing three investigators to interview one hundred twenty-five expert secretaries employed by men representing the major professions and types of business. These secretaries were asked a prepared list of questions, and, as a result of this inquiry, 871 duties of such workers were catalogued. A list of the 871 duties was then printed and sent to 1845 secretaries whose names had previously been obtained from the schools of which they were graduates. Seven hundred fifteen of the responses to this questionnaire were in such form as to admit of tabulation.

Compilation revealed 871 differentiated duties. The median number of duties performed by an individual was about 130, with three-fourths of the secretaries performing less than 210 duties each. . . . The duties from each occupation and from all occupations together were next ranked in order of frequency of citation. These 871 duties arranged in order of frequency were then divided into ten groups, each group containing about 87 duties. In the third place, the duties were divided roughly into twelve classes, according to the type of duty — [2] mailing duties; taking

[1] *Ibid.*, p. 12. [2] Summary of the report cited, p. 15.

dictation; transcription; typewriting; filing; duties connected with filing, indexing, etc.; telephones, etc.; editorial duties; duties involved in meeting and handling people, and financial, bookkeeping duties; clerical duties, and miscellaneous duties and personal services for employer. Some of these duties are, of course, those which do not require especial skill and can be learned during service; other duties require preparatory training. It was found that the amount of training which the secretaries had received was not so good an index of the character of work required of them as was the kind of job. High schools can, therefore, use the Charters list as a guide in curriculum planning as well as can business colleges or university schools of commerce. Although variations in the relative frequencies of citations of duties were found among the fifteen occupational classes investigated, there were very few variations in the highest ten per cent of frequencies.

Besides the names of specific duties which Charters catalogued, he found, by interviewing employers, forty-seven traits which are believed to accompany success in secretarial work. While all the forty-seven traits are important, "the traits which head the list are clearly those which distinguish the successful secretaries. Among these, accuracy is given first place, and of almost equal value are the traits of responsibleness, dependability, and intelligence. The mere naming of such traits as these and others like initiative, judgment, tact, personal pleasantness, and personal appearance, gives us a picture of the expert secretary, who stands at the head of her profession.[1]

Insofar as traits are acquired by academic activities, they may be regarded as curriculum objectives. By keeping in close touch with such analyses as this as they are reported from time to time, directors of vocational education "Can elevate the acquirement of vocational skill from the plane of wasteful undirected learning to that of effective directed activity which is the ideal of the modern demand for the scientific study of education." [2]

[1] *Ibid.*, p. 47.

[2] Kitson, H. D., in the *Twenty-Third Yearbook* of the National Society for the Study of Education, Part II, 1924. P. 255. Students who are particu-

e. Analysis of Social Activities with Reference to Certain Subjects of the Curriculum. The social objectives of high-school English as held by teachers of that subject have been collected by Pendleton.[1] His investigation consisted of (1) the cataloguing of the objectives which have recently been stated by teachers as the desirable outcomes — 668 sources besides all the articles published in eleven important education periodicals in five years; (2) a verification of these aims by checking them against the linguistic abilities of 2759 mature leaders in many communities; and (3) an appraisal according to their relative importance by eighty instructors in English of established competency. As a result of this survey, 1581 objectives were found. As Pendleton explains in discussing his procedure,

> in the accumulating and the appraising of the goals of school English, the investigation depends upon personal judgments. It does not set up an impersonal, objective scheme for ascertaining the facts. The judgments are, however, not mere *obiter dicta*, but the careful utterances of expert teachers representative of those whose influence is today formative regarding school English. The decisions are subjected to a scrutiny which shows them worthy of respect. Furthermore, the check afforded by the study of linguistic abilities of adults operates toward securing objective validity for the catalogue. The study, therefore, does not present merely arbitrary, unverified opinions. Nevertheless, it does not assume to effect an establishment of the ideal, wholly objective social goals for instruction in English which possibly will some day be determined by an exhaustive examination of society itself, rather than of the usages and ideals of teachers.

Several other limitations of the inquiry are also important to note. First, it deals with social outcomes only. These are the linguistic and quasi-linguistic abilities in vernacular intercourse,

larly interested in this problem should read Kitson's entire chapter and should also consult the bibliography which he gives.

[1] Pendleton, C. S. *The Social Objectives of School English.* Published by the author, George Peabody College for Teachers, 1924.

spoken and written, which are deemed worth while in the world of business and pleasure, beyond the school, into which boys and girls will ultimately go. There are other, non-social endeavors prevailing in some schools — such as, for instance, the satisfaction of formal college-entrance, or technical trade, requirements — with which this investigation is not concerned.

The study is also strictly limited to the typical public school, elementary and high. It does not aim to include the special endeavors prevalent in private or parochial schools, in technical institutions, or in colleges.

Furthermore, it does not undertake to determine just where in the school course (that is, in what grades) certain abilities shall be most directly emphasized. The specific arrangement of the curriculum is quite another problem.

Nor does it assume that every objective aimed at can be quite attained during any child's institutional schooling. On the contrary, it recognizes the fact that many desirable ultimate outcomes can be only remotely approached during this short period and in the pupil's necessarily immature experience of life. But the school may accomplish at least preliminary instruction, so that the education to be had in full only in later stages of development will be delimited and, in large measure, predetermined. An objective is a goal aimed at, not necessarily a goal completely attained.[1]

Perhaps nothing more overwhelming could be announced to a complacent superintendent of schools or teacher of English than that 1581 objectives had to be attained at some time in his pupils' linguistic experiences. It is, therefore, comforting to find that many of these objectives can be attained outside the school. Sufficient numbers of objectives are, however, left to the school and are gathered into one or another of six practical categories:

Fundamental language facts
Written compositions
Silent reading (including literature)
Oral reading
Conversation
Public speaking

[1] *Ibid.*, pp. 3–4.

Inasmuch as these objectives have already been in the minds of educators for years, the Pendleton list provides an opportunity for the scrutinizing of current practices in the light of these more or less conventional aims and of any other criteria that may be set up. The next step is that of deciding in what grades and by what activities the valid specific aims shall be set up for attainment.

A second example of analysis of social activities with reference to certain subjects of the curriculum is that of the American Classical League, which attempted first to set up and then to evaluate a list of twenty-one ultimate objectives of high-school Latin. The objectives which were derived by an examination of the literature of the subject were first evaluated by means of opinions obtained in three ways:

(1) A comprehensive general questionnaire filled out by 1150 experienced secondary teachers of Latin and covering the entire field of objectives, content, and method for the secondary course as a whole.
(2) A special score card for the relative evaluation of objectives year by year filled out by over three hundred teachers in various parts of the country.
(3) A symposium on the disciplinary aims of Latin to which nearly seventy leading professors of education and psychology contributed.

On the basis of evidence secured from objective data and from analyses of opinion we have sought to answer the following questions about each objective in the list:

1. For what Latin pupils, and for what proportion of Latin pupils is this objective of value, if attained?
2. To what extent are there elements common to the study of Latin and to the more general field or fields with which this objective is concerned?
3. To what extent is this objective attained or attainable through the study of Latin?

4. What content and methods are found to be most effective in attaining this objective?

5. What constructive measures should be taken in reorganizing content and method to insure a fuller attainment of this objective?[1]

The objective data referred to in the passage just quoted were obtained by many collaborating investigators. The data consist of the results (1) of numerous tests of several thousand Latin and non-Latin pupils; (2) of vocabulary studies; and (3) of questionnaires to tens of thousands of students or former students of Latin and to psychologists.

After investigating and obtaining expert opinions upon the problems of Latin, the investigators formulated the objectives of Latin for four-, five-, and six-year secondary-school courses. The objectives agreed upon for a six-year course are as follows:

I. Immediate Objectives

The indispensable primary immediate objective which underlies the entire process for each year of the course is progressive development of power to read and understand Latin. This involves an increasing mastery of the elements of the language, namely, vocabulary, forms, and syntax. The relative emphasis to be attached to these elements year by year will depend upon the contribution which they may make to the ability to read and understand Latin or to the attainment of certain of the ultimate objectives. The application of this principle will be discussed in detail in the chapters on content and method.

II. Ultimate Objectives

The following lists give the ultimate objectives we regard as valid for each successive year of the six-year course. The relative emphasis ordinarily to be attached to these ultimate objectives is indicated by the order in which they are given.

[1] *The Classical Investigation*, Part I, *General Report*. Princeton University Press, 1924. Pp. 36–37.

First year

1. Increased understanding of those elements in English which are related to Latin.
2. Development of an historical and cultural background.
3. Development of correct mental habits.
4. Development of right attitudes toward social situations.

Second year

1. Increased understanding of those elements in English which are related to Latin.
2. Increased ability to read, speak, and write English.
3. Development of an historical and cultural background.
4. Development of correct mental habits.
5. Development of right attitudes toward social situations.

Third year

1. Increased understanding of those elements in English which are related to Latin.
2. Increased ability to read, speak, and write English.
3. Development of an historical and cultural background.
4. Development of correct mental habits.
5. Development of right attitudes toward social situations.
6. Increased ability to learn other foreign languages.
7. Elementary knowledge of the simpler general principles of language structure.

Fourth year

1. Increased understanding of those elements in English which are related to Latin.
2. Increased ability to read, speak, and write English.
3. Development of an historical and cultural background.
4. Development of correct mental habits.
5. Development of right attitudes toward social situations.
6. Increased ability to learn other foreign languages.
7. Elementary knowledge of the simpler general principles of language structure.

Fifth year

1. Increased ability to read, speak, and write English.
2. Development of an historical and cultural background.

3. Development of correct mental habits.
4. Increased understanding of those elements in English which are related to Latin.
5. Development of right attitudes toward social situations.
6. Development of literary appreciation.
7. Increased ability to learn other foreign languages.

Sixth year

1. Increased ability to read, speak, and write English.
2. Development of an historical and cultural background.
3. Development of correct mental habits.
4. Development of literary appreciation.
5. Development of right attitudes toward social situations.
6. Increased understanding of those elements in English which are related to Latin.
7. Improvement in the literary style of the pupil's written English.[1]

The objectives of algebra have also been derived by the same methods as those employed in English and Latin.[2] In addition to employing these subjective methods for discovering the objectives of algebra, Thorndike turned to the school textbooks in subjects for which algebra is alleged to be preparatory and to liberal samples of the *Encyclopedia Britannica.* It was assumed that, if algebraic skill or information is needed in the study of these books, the character of their contents would indicate that fact. Although one may not be able to show full justification for the pursuit of one subject by pointing out its value to a pupil who is to pursue other subjects of unknown or questionable worth, yet this method may not be contested so long as such other subjects actually are pursued.

The results of this investigation can be stated briefly. The canvass of forty-four high-school textbooks in social sciences,

[1] *Ibid.*, pp. 79–82.
[2] Thorndike, E. L., *et al. The Psychology of Algebra.* The Macmillan Company, 1923. Chapter II.

physical and biological sciences, and practical arts showed, out of a total of 98,630 linear inches of textbook material, a per cent of 2.1 of linear inches in which algebra is useful. Although Thorndike suggests possible enrichments of other subjects by means of which algebra might advantageously be more widely applied, he finds that, for the books examined, the uses of algebra are chiefly as follows: (1) The most important objective of algebra should be that of teaching pupils to read statistical graphs. (2) For use in physics, the chief objective is the mastery of the formulæ, especially in "the transformation known as 'changing the subject of the formula.'" (3) Physics raises also the objective ability in choosing appropriate formulæ, making substitutions, and solving equations — that is, "skill in clearing of fractions (chiefly in proportions), transposing, combining, and taking numerical square root. (4) Chemistry raises the objective of ability to form proportions, as in problems which deal with proportion mixtures and alloy.[1] The same objectives — skill in the reading of graphs and formulæ combined with a demand for somewhat less skill in computing formulæ — are derived from the examination of the *Encyclopedia*. In short, "(1) for utilitarian values in the first year of algebra one must pay much attention to the formula and to the statistical graph," and "(2) the student whose aptitudes and capacities will probably lead him into any one of a large number of fields of advanced (technical) study . . . . should have preparatory work not merely in algebra but in many other branches of mathematics to which rigorous algebra is the necessary antecedent and tool." [2]

2. *Classification of the results of investigations of human society.* The results of the five types of investigation of

[1] *Ibid.*, p. 78.

[2] *Ibid.*, p. 88. See also Raleigh Schorling, *A Tentative List of Objectives of Junior High School Mathematics.* George Wahr, Ann Arbor, Michigan. 1925.

human society can, of course, acquire significance only when classified and interpreted in terms of life — life as conditioned by certain communities, life as an enterprise which comprises certain major lines of experience, life as constituting the activities which, in turn, compose the child's academic experiences. Furthermore, if our classification of human activities and needs is to be comprehensive, it should be compared with other classifications of a different nature; that is, with the classifications of speculative philosophers.

Our next problems are, therefore, first, that of classifying such results as have been obtained by the five types of analyses of human activities and, second, that of finding out whether the legitimate and real values as set up by other philosophers of education can be classified under the terms which are used by educational philosophers whose investigations of human society have just been canvassed. If, for example, it can be shown that the recent analyses of society yield results which admit of systematization, and if the somewhat more manageable terms used by Bobbitt can be interpreted so as to comprise the more general philosopher's terms, then, and only then, can the newer terms be adopted.

a. Classification of the Results Obtained by Analyses of Human Activities. Local analyses such as city or community surveys or the "institutional" analysis of Lull are attempts to discover in detail what one must encounter and indeed what one must do to be successful in a given locality or business organization. As far as such analyses go, they show that certain vocational requirements together with other more or less specialized duties exist in a community. They show also that certain specialized duties require highly specialized skill or information, while certain more general duties require

somewhat indefinite amounts of general skill and information. When this type of analysis is pressed further to find out the characteristics of specified occupations, as it has been by Charters, it reveals also a large number of traits which characterize successful workers. These traits, like the duties discovered in other local analyses, are divisible into those which are fairly specific and those which are very general, so far as the required skills and information are concerned.

Analyses which are conducted to discover the values possessed by certain bodies of knowledge show that any subject, such as English, Latin, or algebra, can make contributions of which men may profitably avail themselves in technical vocations, in unspecialized activities, in individual pastime pursuits, and so on. Some of these contributory values are very definite, as learning the uses of capital letters, periods, and important word roots; other contributory values are very general — in some cases even indefinite — such as the appreciation of approved or standard literature, the development of right attitudes toward social situations, or the understanding of the function concept. In other words, a subject such as English, Latin, or algebra can be shown to have outcomes which contribute to both utilitarian and inspirational values, to both general and specific situations, to both community and personal needs, and to both real and imagined situations. Furthermore, analysts believe that these diverse outcomes can be achieved in any well-conducted pursuit of these subjects.

The analyses in which human activities are viewed as a whole consider examples of both successes and failures in meeting life situations. Such analyses show that the most successful persons are those who continue to improve after successive tentative goals are attained. They show that the efficient

citizen is one whose interests are diverse, whose skills are specific and general, and whose aspirations are numerous. Such analyses admit of the formulation of objectives in terms of each specific human activity. They include all activities for which any branch of training or subject matter can prepare, inspire, or direct any person and also all the specific objectives of persons who employ in their activities any such training or subject matter. For example, all the 1581 objectives of English can be classified as readily as so many botanical specimens by means of the general or major objectives of Bobbitt: the ability to spell, to comprehend the meanings of common foreign words and phrases, to identify the leading English and American writers, to appraise the degree of authority with which an author writes — these objectives, as examples, may in different individuals fall under any or all the following general objectives of Bobbitt — activities which involve language, citizenship, general social life, spare time pursuits, or vocations. Similarly, each of the objectives set up by the Classical League may, for different persons, fall under the same five general objectives. Likewise, it seems that, for purposes of classification, all objectives of education can be subsumed under the ten names of general objectives of Bobbitt.

b. Classification of the Findings of General Philosophers of Education into Ten Major Objectives. An examination of the terms used by speculative philosophers of education to denote objectives reveals these terms: intellect, knowledge, character, virtue, piety, happiness, individual or group perfection, culture, intrinsic value, instrumental value, utility, and so on. Life, one finds, is, according to philosophers in general, concerned with body, soul, intellect, morality, utility and leisure, because life is material, moral, social, and religious.

For we assume as our fundamental principle that man is spiritually free, and yet determined by the spiritual life he has lived and is living, and by the spiritual environment in which he has lived it; that the ultimate aim of life is, therefore, spiritual and not material; that spiritual growth is advance in spiritual capacity both to receive and to impart spiritual strength; that this implies that man's spiritual life is derived from, dependent on, and sustained by, spiritual agencies which are supernatural in the sense that they are above and beyond the material. In brief and plain terms, that man's life is not only material but moral and social, and yet more, religious. Consequently, the theory of education we are attempting to set forth is one which assumes that the activities of life should be evaluated according to a spiritual standard which finds the highest good of man in the perfection of his spiritual nature — in nobility of heart and mind, in reverence and awe in the contemplation of the divine perfection, in love of all that is great and good, in hearty acceptance of duty, in strenuous endeavor, in earnest longing for truth, in appreciation of beauty, in an estimate of the things of life consistent with the view that what man is far outweighs what he has, whether of material or of intellectual possessions.[1]

As all objectives named or implied by either the speculative analysts of society or the analysts of concrete activities can be classified within the ten major objectives of education, that formulation can be agreed upon as meeting the requirements stated on page 320. This formulation will, therefore, be referred to in the succeeding chapters of this book as a representative and workable inventory of present-day objectives. In those later chapters these objectives will be treated in connection with the topics of the respective sections. The next chapter will relate these objectives to secondary-school curricula.

[1] Welton, John. *What Do We Mean by Education?* Macmillan and Company, 1915. Pp. 92–93.

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CHAPTER X

HOW OBJECTIVES AFFECT CURRICULA

Should objectives and curricula be divorced or integrated? The objectives of education must be carried into subject matter and pupil activities. Indeed, subject matter and pupil activities, as means of instruction, constitute a large division of the objectives of education. For the accepted definition of the term *objective* includes the plans for the activities to be employed in attaining values as well as the values themselves.[1] According to this accepted meaning of the term objective, there are, consequently, as many specific items of subject matter and forms of pupil activities as there are specific objectives.

Naturally, the concept of the term objective has been restricted by many practitioners. These persons have attempted to set up objectives, but have instead only set up values. Alongside these values which usually denote crude, gross aspects of life, these practitioners have arrayed subject matter indiscriminately, if not blindly. They have lived in neither the philosophical age nor the scientific age of their more penetrating and enlightened contemporaries. Groping when the light of day shone all about them, self-styled educators have grasped at huge masses of subject matter as a drowning man grasps at floating reeds. Living in an age of science, they seek man in linguistic syntax; or, living in an age of creative literary achievement, they seek man in the dismal fragments of unordered science. The

[1] See p. 292.

meaning of science, of literature, of art, of life itself is hidden to these complacent, though often well-meaning and industrious, pedagogues. And here lies the fault: either practice has run amuck for lack of clear thinking, or thought has proved vain for lack of the touchstones of practical life.

In order to insure concreteness for these paragraphs three types of examples should be in the reader's mind: (1) examples of educators who have attempted to formulate objectives without an adequate survey of subject matter; (2) examples of educators who have amassed subject matter without clear objectives; and (3) examples of educators who have attempted to formulate either objectives or subject matter or both without an adequate acquaintance with practical life. Of the first type of examples — educators whose values lack definiteness in subject matter — Plato and Francis Bacon are excellent instances. True it is that each of these men said much about subject matter, but it is also true that each of them discussed values and then either dismissed the values or else failed to present a comprehensive system of subject matter for the attainment of them. To this type belong, as additional examples, all teachers of English who talk of enjoyment and broad literary contacts as values and then confine their pupils to a narrow range of unpleasant readings, and all teachers who essay to instruct pupils in science and then proceed as though the textbook itself were science. All such persons fail to analyze the values which they esteem and later to provide appropriate subject matter as one of the means of attaining such values.

Of the second type of examples — educators whose subject matter lacks systematizing influence of clear objectives — thousands of present-day teachers are illustrations. Teachers who drill pupils upon mathematical formulæ without giving meaning to these formulæ — such teachers as

one often finds in charge of secondary-school classes — all these know subject matter in a limited way, but are either ignorant or indifferent. Teachers of science, literature, language, and history often ally themselves with this group of undesirable practitioners. School administrators who allow their elementary, secondary, and collegiate English departments to drift so far apart that pupils can only with difficulty make the transition from one school to another, or those whose elementary courses overlap seriously their secondary courses — such administrators lack definite objectives in the sense in which the term objective is here employed. The strong tendency to conduct extensive commerical courses in rural high schools illustrates still further the tendency to allow subject matter to be used as the chief guide in school planning.[1]

Of the third type of examples — educators whose objectives or subject matter or both lack a close relationship to practical life — all Ciceronians are instances. John Sturm, despite his notable work in the extension of secondary education in Germany, must be assigned to this group because of his failure to envisage life in its relationship to curricula with such completeness as Vittorino had envisaged it. This limitation led Sturm and hundreds of his successors in the *Gymnasien* entirely to overlook as much of secondary school subject matter as they included. The fact that such impractical persons often gain control of schools and exert a blighting influence for centuries as they did in early modern English secondary and collegiate institutions, leads one to classify these educators as the most dangerous of all. These dangerous but fortified conservatives invade all ranks of teachers. Even vocational schools are infested with them:

[1] Cf. H. W. Schmidt, "A Brief Investigation of Vocational Trends among High School Students in Wisconsin." *Industrial-Arts Magazine.* XII, 215–222.

note, for example, the utter lack of appreciation that is shown for practical matters by vocational teachers who expect the acquisition of certain simple skills to equip a pupil for secretarial work.

In contrast with the educators just described as exemplars of maladjustments of values and subject matter, there are other educators who are able to integrate values and subject matter and thus see beyond the narrow interests of partisans. Such exemplars can be found among literary humanists, scientists, educational philosophers, and school administrators. Of literary humanists whose objectives were broad and clear, Matthew Arnold and Jebb may be cited; of scientists who saw beyond narrow partisan interests, Huxley is an illustrious example; of educational philosophers who have thought in terms also of subject matter, John Dewey is a striking figure; of administrators who have integrated objectives, subject matter, and practical life, W. T. Harris is a notable example.

Aristotle provides a pertinent theory which by way of analogy can be used profitably in closing this introduction to the discussion of the relationship between formulation of objectives and the curriculum. It was Aristotle's belief,[1] as stated previously, that an occupation which lacked order or rationality was illiberal and that the pursuit of such an occupation was consequently illiberalizing. Without unduly extending Aristotle's concept of illiberal or liberal activities, one may classify subject matter and curricula as liberal and the results of such subject matter and curricula as productive of both "culture" and utility only when they are planned with the guidance of sound objectives. All values must, therefore, be canvassed, and those which are feasible for attainment in secondary schools must be systematically

[1] See p. 218.

provided for in the formulation of objectives. Historical examples have already warned educators against a belief that either values or methods of attaining them are permanent, unchanging entities.

Educational values and objectives are main guides in curriculum planning. Five ways in which values and objectives guide the modern curriculum maker will be discussed in this section. It is recognized, of course, that many variants of these five ways are encountered in actual curriculum planning.

1. *How subject matter grows out of successes and failures.* In the earlier discussion of Bobbitt's procedure, reference was made to the derivation of health objectives by analyzing the characteristics of various persons who exemplify both physical superiority and physical inferiority. Insofar as means to fit the ends can be found, the detailed objectives thus derived indicate definitely the character of courses in physical or health education. A similar plan has long been used by teachers of English,[1] who have been able in this manner to discover the future needs of pupils and then to drill them upon elements of English in which they are found to be deficient. When so used this plan consists of three steps: first, of discovering the elements of successful living by analysis of the successes and failures of any or all groups of persons; second, of organizing into a course all the desirable elements found in the analysis; third, of arranging the teaching materials so that pupils are tested for proficiency in each unit of content, instructed in and drilled upon any elements in which deficiencies are discovered, and finally re-tested to determine whether sufficient drill has been administered. Whenever any important aspect of life

[1] Cf. W. W. Charters. *Curriculum Construction.* The Macmillan Company, 1923. Chapter XVII.

is analyzed, the results of the analysis, whether in the form of deficiencies of the inferior or the merits of the strong, indicate socially valid subject matter.

2. *How the development and enrichment of knowledge leads to new values and then to new subject matter for schools.* All departments of knowledge are in a flux. At the present time new developments are rapidly affecting physical theories, great literary achievements are numerous, social studies are being enriched, many common activities, such as homemaking and agriculture, are becoming systematized, and so on. Each advancement made outside the school should, in case the advancement affects or should affect school subject matter, be reflected by an advancement inside the school. This principle has, however, been conceded reluctantly in the case of many new forms of subject matter. As the preceding historical sections have shown, the vested interests of educators have often formed a bulwark against valuable progress in subject matter. Educators are not always the first persons to pass favorable judgment upon new bodies of knowledge. Often, it has happened, as in the case of Dr. William Harvey's profession, that the discovery of important facts is followed by the belief that the discoverer "was crackbrained," so that "all the physitians" have turned against him.[1] Another example is found in the "crackbrained" individual, J. R. Mayer, who discovered the law of the conservation of energy; he had also to undergo suffering at the hands of scholars for a principle which modern schoolboys are required to learn.[2]

After some time, however, the world becomes reconciled to each new notion or fragment of knowledge; next, the

[1] Aubrey, John. *Lives of Eminent Persons.* London, 1813.
[2] Thomas, W. I., in *Suggestions of Modern Science Concerning Education,* by H. S. Jennings, *et al.* The Macmillan Company, 1917. P. 182.

fragment of knowledge may become essential in scientific thought, and then there should be a demand for an expansion of the curriculum of the school. In guiding this cycle, modern educators have been quite as prone to retard as to accelerate curriculum reconstruction and expansion. Three hundred years ago Harvey thrust new knowledge upon an ungrateful world. A century later Defoe concluded that, for many persons, a better education might have been acquired if the existing curriculum could have been discarded and a new one comprising such subject matter as that developed by Harvey, Descartes, and other modern men adopted in its stead. The struggles of each modern European language for a place in the curriculum of the respective countries is a further series of reflections upon the world at large and upon educators in particular. At the present time, however, many teachers are attempting to show the values of newly discovered items of knowledge and are attempting to incorporate them into their courses.[1] Curriculum progress follows the adoption by educators of the values which grow out of new discoveries of knowledge.

3. *How new subject matter grows out of the basic concepts of an age.* Many educators, including Plato, have believed that concepts could be learned by youth and so applied to the world's issues as to bring order out of chaos. For example, Rugg, in elaborating this belief, has discovered in the writings of "frontier thinkers" in the social sciences a large number of basic generalizations and concepts. This procedure apprises the investigator of advanced critical thought upon the social studies and, when combined with the other steps of Rugg's procedure, leads directly to a

[1] Cf. Jean Broadhurst *et al.* "Studies in Everyday Bacteriology." *Teachers College Record*, XXIV, 489–503 and XXVI, 230–245. November, 1923 and November, 1924.

reorganization of subject matter with the guidance of the most enlightened counsel of the present day. Fundamentally, this procedure is the same as that employed in the physical science departments; in these departments "frontier thinkers" are laboratory investigators whose results are winnowed and interpreted and finally adopted as subject matter for teaching. In the social sciences, the "frontier thinkers" are obliged to work in laboratories which exist wherever society exists; the results of their work are also winnowed, interpreted, and adopted by schools. For example, up to the present time, Rugg's program has led (1) to the discovery of some three hundred important contemporary problems, such as "the problem of determining on what bases to admit immigrants," "the problem of providing continuous employment for all," and "the problem of correlating our rail, water, and motorized transportation"; (2) the defining of basic generalizations of the social sciences, such as the following: "the problem of food supply underlies all other problems of industrial nations," and "as hand labor gives way to machine labor, the standard of living for the general population slowly rises"; (3) the study of "cue concepts," such as "pressure of population," "democracy," and "nationalism"; and (4) the collecting and organization for instructional purposes, "the great movements and themes underlying the development of American life, and of the focal persons, events, and facts of time and place." [1]

4. *How theoretical or unmeasured values influence subject matter.* Despite the implication by experts in educational measurements that whatever exists at all can be measured, there are at present certain deficiencies in the measurement program. In discussing educational objectives one has to

[1] *Op. cit.*, pp. 24–30.

rely in part upon philosophers' terms, which stand for somewhat intangible traits or characteristics. That is, one may adopt activity analysis as the source of most if not all educational objectives and still be confronted with such terms as *responsibility*, *tact*, *judgment*, and *accuracy*. Indeed, it is only when one assumes that an activity requires solely automatic and mechanical responses that, in conducting activity analysis, one can state one's results in terms which stand for measurable entities. That is, the traits which distinguish successful secretaries were found by Charters to be accuracy, responsibleness, dependability, intelligence, initiative, judgment, and tact. Without debating the question as to whether attainments in these traits can ever be measured, one may assert that these terms now stand for qualities which have not yet been isolated sufficiently to make them readily measurable.

One is, therefore, on the speculative philosopher's territory if one attempts to construct a curriculum to provide training in the traits which distinguish successful workers. The traits which are revealed by modern activity analyses are similar in general character to those which Isocrates, Plato, and Erasmus derived by their analyses of life. Only after further analyses of the operation of these traits and the various forms of content employed by one who possesses them have been made, can these traits become definite guides in formulating curricula. Until that time arrives, curriculum makers may assume either that since traditional subject matter has been pursued by many persons who possess these traits, the subject matter must have engendered these qualities, or that these traits develop somewhat independently of the subject matter by which one is nurtured. In either case, the matter will be settled by speculation and interpretation and not by strictly objective data.

The importance of the traits in question leaves no choice about facing the issues involved, and the lack of knowledge about the traits makes speculation necessary. These two conditions, the importance of the traits and present-day ignorance about them, may lead one to justify any subject of a curriculum; and no one else can prove, save by equally speculative arguments, that the first person is incorrect. If, however, the consideration of these traits leads the curriculum maker into speculative philosophy, it may be urged that he seek counsel in his speculation from experts in this matter. This will lead him to consider the principles of Aristotle, Herbart, and Arnold (1) that well-organized subject matter is an essential of a good curriculum, (2) that subject matter should be selected and organized so as to facilitate desirable self-activity of the pupil, and (3) that both literary and scientific studies are necessary parts of a complete education, and so on. It may be suggested that friends of any of the traditional subjects which have fared ill in their attempt to stand upon objective grounds now have recourse to arguments drawn from the most objective procedures ever used in curriculum construction.

5. *How preparatory values influence subject matter.* Prerequisites for certain subjects or curricula have existed since Plato's time. The implication of these requirements has been that certain subject matter must have been mastered by a student in order to equip him for the specific tasks of an advanced subject. It is alleged, however, that many preparatory values are only apparent. It appears, therefore, that the curriculum maker can organize sequences of subjects with reference to preparatory values only after he has analyzed each subject in the sequence. Such an analysis should reveal the specific skill and knowledge required by an advanced subject, and perhaps, as in Charters' activity-

analysis, the traits which accompany the successful pursuit of advanced subjects.

Thorndike's analysis of algebra indicates that such an analysis has not generally been made in the planning of sequences of subjects. He found instead that possible preparatory values of elementary subjects are overlooked in the planning of advanced subjects, so that possible values are missed, and also that elementary subjects sometimes lack the type of enrichment which is needed to ensure their having preparatory values for certain later studies. That is, an elementary and prerequisite subject can be so pursued as to yield little preparatory value for an advanced subject. Thorndike's findings indicate that there should be not only extraschool activity analyses to find out what subjects should be pursued in schools, but that analyses should also be conducted to show what items should compose elementary subjects in order to provide preparatory training for pupils who are to pursue advanced courses.

The attainment of educational objectives as a measure of curriculum values. Curricula are judged mainly in terms of the attainment of educational objectives. When objectives are attained through the agency of curricula and curricular activities, one or more of the four following types of contacts can be designated as the generator of desirable results. First, contact with subject matter; this type of contact implies only the subject matter to be presented in some fashion to pupils. As far as this contact is sufficient, any teacher or any book in a given field may present any subject matter within a desirable field and achieve desirable results. Second, effective contact with subject matter; this type implies that subject matter must be presented in certain ways in order to attain objectives. Third, contact with teachers; this type of contact implies that the teacher's

equipment may be an effective factor of the teaching-learning process. Fourth, contact with the social life of the community of pupils; this type of contact emphasizes the inspiration and reënforcement received by each pupil from the other pupils of his group. Since the actual curriculum which a pupil masters is the only effective curriculum for him, and since the effectiveness of a curriculum may depend largely upon the type of contacts employed during the learning process, the selection and organization of subject matter with reference to these contacts is a fundamental curriculum problem.

Although one can seldom discover even by diligent investigation, the extent to which each type of contact has been effective in a given curriculum or subject, one can discover the effects of certain types of emphasis upon the attainment of objectives. Some of the investigations of pupils' attainments show only that the types of contacts employed were inadequate, while others show that the attainments which follow certain miscellaneous contacts are sometimes adequate. A few samples of the results of inquiry into the effectiveness of subject matter will be reviewed in the following paragraphs.

1. *Investigations of attainments in certain subjects.* Crow conducted an investigation in which he evaluated English literature in terms of the objectives of the course in literature.[1] The objectives which Crow employed as criteria were derived from a canvass of authorities on the teaching of literature and are as follows: (1) to "interest and entertain the pupil in his English literature reading and study so that he will form the purpose and habit of reading books of a like high type during his leisure time"; (2) to "inspire the

[1] Crow, C. S. *Evaluation of English Literature in the High School.* Teachers College, Columbia University, Contributions to Education, No. 141, 1924.

pupil with high ideals of character, loyalty, love, service, etc., which, as purposes and standards, ought to give needed direction and control to his life"; (3) to "give the pupil an appreciation of the classics as works of art through emphasizing elements of beauty in both thought and form of expression"; (4) to "lead the pupil to recognize the permanent value of books." Crow proceeded in his evaluation by obtaining the judgments of 1999 juniors and seniors of twenty-nine high schools upon literature which they had read. As a measure of the attainment of each of the four objectives, pupils were requested to rate each literary selection upon a seven-point scale, ranging from −3 to +3. By obtaining in this way the "educational record" of each of seventy-four literary selections, Crow was able to judge its relative value in attaining each objective; its value for girls and for boys; its effectiveness when studied either in class or out of class; the effect of its relative difficulty; and the relation of pupils' academic expectations to its effectiveness. Table VI shows for each of the four objectives the six selections which stand highest and those which stand lowest.

This table can be used to indicate the character of Crow's results in regard to the relevant variables which he studies. The relative values of different selections for attaining each objective indicate, for example, that as presented in schools, Chaucer's *Prologue* is one of the poorest choices possible, and that, for three objectives, Van Dyke's *The Story of the Other Wise Man* is one of the best choices which teachers could make.

TABLE VI

THE LITERARY SELECTIONS WHICH STAND HIGHEST AND THOSE WHICH STAND LOWEST IN PUPILS' JUDGMENTS [1]

1. *As to leisure time value*

a. Selections Which Stand Highest

Daddy Long-Legs	*The Call of the Wild*
Freckles	*The Virginian*
The Crisis	*Little Women*

b. Selections Which Stand Lowest

Emerson's Essays	*Macaulay's Life of Johnson*
Chaucer's Prologue	*Bunker Hill Oration*
Burke's Conciliation	*Il Penseroso*

2. *As to moral value*

a. Selections Which Stand Highest

The Story of the Other Wise Man	*Little Women*
Helen Keller's Story of My Life	*Peter Stirling*
The Man without a Country	*The Crisis*

b. Selections Which Stand Lowest

Chaucer's Prologue	*Twice-Told Tales*
Rip Van Winkle	*Jungle Books*
The Odyssey	*Poe's Tales and Poems*

3. *As to æsthetic value*

a. Selections Which Stand Highest

The Story of the Other Wise Man	*Thanatopsis*
Evangeline	*L'Allegro*
To a Skylark	*The Chambered Nautilus*

b. Selections Which Stand Lowest

Dr. Jekyll and Mr. Hyde	*Macaulay's Life of Johnson*
Rip Van Winkle	*Twice-Told Tales*
De Coverley Papers	*Chaucer's Prologue*

[1] Adapted from Crow, *op cit.*, pp. 49, 64, 77, and 90.

4. *As to permanent value*

a. Selections Which Stand Highest

The Story of the Other Wise Man	*Freckles*
Helen Keller's Story of My Life	*Ben Hur*
Little Women	*The Crisis*

b. Selections Which Stand Lowest

Dr. Jekyll and Mr. Hyde	*Macaulay's Life of Johnson*
Rip Van Winkle	*Twice-Told Tales*
De Coverley Papers	*Chaucer's Prologue*

The relative values for either boys or girls were found to be much alike save in the case of the æsthetic objective. Girls were found, however, to read more extensively into these selections and to rate them higher than do boys. It was found that such selections as *The Call of the Wild, The Last of the Mohicans,* and the *Bunker Hill Oration* appeal more to boys than to girls, while the reverse is true of *Little Women, The Little Minister, The Bluebird,* and *Enoch Arden.* For certain selections, reading outside the class gave better results for leisure time values than did class study, while for other selections class study was found more beneficial. Selections which produced better results by cursory reading are *Poe's Tales and Poems, The Man Without a Country, Lamb's Tales, The Princess, Midsummer Night's Dream, Burns' Poems,* and *Twice-Told Tales.* Selections which were more beneficial when studied in class are *A Tale of Two Cities, Silas Marner, Ivanhoe, Evangeline, Enoch Arden, The Courtship of Miles Standish, The Last of the Mohicans, The Lady of the Lake, The Vicar of Wakefield,* and *Idylls of the King.* Similar findings were obtained for extraclass reading and class study in the case of each of the other three objectives. The effect of the relative difficulties of literary selections is obvious from Table VI. Considerably

higher ratings were given to the seventy-four selections by pupils who expected to go to college. Crow concludes that, "such an evaluation of each of the seventy-four classics now commonly used in our high schools ought to center attention on definite social values to be sought through English literature as a means; ought to be influential in reorganizing our present course of study in English literature; and ought to be suggestive of aims and methods of teaching which will help to realize in a fuller way the peculiar social values of each one of the classics." [1]

Corroborative evidence for Crow's conclusions has been found by investigating literature study in Wisconsin high schools.[2] This investigation showed, however, that the attainments of Crow's juniors and seniors in leisure time values are little if any in advance of those already achieved by freshmen and sophomores. That is, *The Call of the Wild, Freckles, Little Women,* and *Daddy Long-Legs* along with others of similar difficulty and intrinsic appeal are the outstanding favorites of pupils of Grades IX and X as well as of older pupils. The fact that in the choice of reading matter, as in the naming of the desirable values of literature, the pupils of many schools show little improvement from Grade IX to Grade XII indicates that the real problem of literature study consists of establishing different kinds of contacts in literature classes. Such contacts, if they are to lead to increased attainment of values throughout the course, must be accompanied by joyous, wholesome, and instructive experiences.[3]

[1] *Op. cit.*, p. 172. An evaluation of chemistry in secondary schools has been made by S. R. Powers: "Achievement in High School Chemistry: an Examination of Subject Matter." *Teachers College Record*, XXV, 203–211. May, 1924.

[2] Uhl, W. L. *The Materials of Reading.* Silver, Burdett and Company, 1924. Pp. 148–159 and 182–183.

[3] *Ibid.*, pp. 157ff.

Several investigators have tried to discover the extent to which pupils' contacts with Latin lead to desirable results. In Part I of the report of The Classical Investigation, the objectives of Latin are presented and the present-day attainments in each objective are canvassed.[1] This canvass showed that the achievements of pupils vary according to the type of contacts which are provided in the study of Latin. It was disclosed that many teachers proceed as though all their pupils were expecting to pursue Latin for four or more years, while only fourteen per cent of the pupils who begin Latin actually do pursue it for even four years. It was found also that although teachers generally agree that the study of Latin should heighten one's standard of English expression, many teachers employ methods which encourage slovenly translations.[2] While teachers agree that the study of Latin should lead to the development of an appreciation of literary qualities of Latin literature, many teachers emphasize almost solely the linguistic elements of Latin language, and their pupils discontinue Latin study before the literature of Rome has become intelligible to them. Similar discrepancies were found between objectives and practices in the case of many other values which are believed to grow out of the study of Latin; the use of English derivatives as an aid in the study of Latin, although almost universally favored in discussions of the teaching of Latin, was found to be far from universal in practice. Paralleling this neglect of derivative study, was the failure of Latin pupils of a given initial ability to show outstanding superiority to non-

[1] Princeton University Press, 1924. Chapter III.

[2] See Maxie N. Woodring, *A Study of the Quality of English in Latin Translations* (Teachers College, Columbia University, 1925) for a detailed discussion of this matter. Miss Woodring found that the quality of English used by pupils in written translations of Latin is lower than the quality of English used in English compositions.

Latin pupils of the same initial ability. The upshot of this portion of the Classical Investigation is that the

> automatic realization of the values implicit in Latin cannot be counted upon and that time must be found for the introduction of appropriate material and the use of appropriate methods in order to secure the satisfactory attainment of any of the ultimate objectives.[1]

In a monograph which will be reviewed more fully in Chapter XV, Curtis found that, in general science, teachers agree upon the effectiveness of extensive reading in general science.[2] In spite of this agreement of teachers, he found that few teachers provide for such reading. By experimentation, Curtis found, however, that carefully directed, extensive reading has demonstrable effectiveness in enabling pupils to attain the desirable objectives of general science.

These investigations of the relation between the attainment of objectives and the subject matter and contacts employed show that curricula can be evaluated in terms of the attainment of educational objectives. The investigations show, however, that one may err seriously in the employment of such a criterion for evaluating curricula. It appears that many teachers believe that their subjects have implicit values which will automatically enter the lives of all pupils who pursue these subjects. This obsession of teachers leads them to fail to establish proper contacts between their subjects and their pupils. Instead of choosing the best subject matter within their fields, teachers often choose much that is poor or indifferent. Instead of employing the best methods known, teachers often employ methods which cannot fail to interfere with the attainment of desir-

[1] *Ibid.*, p. 100.
[2] Curtis, F. D. *Some Values Derived from Extensive Reading of General Science.* Columbia University, 1924.

able objectives. That is, the first type of contact mentioned at the beginning of this section — any relevant subject matter with any form of procedure — is often established, and then the best of results are vainly hoped for. Instead of such systematic choice of subject matter and methods as will be illustrated later in Chapter XV, educational objectives are often forgotten and an opportunistic adoption of readily accessible subject matter and methods is made. Until that chapter is reached, one should postpone judgment upon curricula in terms of the attainment of objectives. As now organized, many schools indicate by their attainments only what can be done when there is a lack of knowledge of the relative effect of different subject matter and methods in a given field and also a lack of knowledge whether desirable values are the results of teaching or of general maturing. Briefly, the formula of this section — the evaluation of curricula in terms of progress toward desirable objectives — can safely be applied only to schools whose curricular activities have actually been systematically planned with reference to sound objectives.

2. *Investigations of attainments in entire curricula.* The attainment of objectives as they are related to curricula can be measured in terms of entire curricula as well as in terms of individual subjects. Two investigations of this nature will be reported here.

In conducting an investigation of the junior high school, Bruner assembled representative theories about this institution and then, in view of these theories, organized the curricula and later examined the attainments of the Okmulgee, Oklahoma, junior high school.[1] He found general agreement that (1) "the junior high school should offer an en-

[1] Bruner, H. B. *The Junior High School at Work.* Columbia University, 1925.

riched curriculum, and (2) should assist in guiding pupils according to their interests, aptitudes, capacities, and abilities." [1] Accordingly, "broadening and finding" courses were organized in different departments of the school. These seventh- and eighth-grade courses were organized with reference to three aims: (1) the provision of opportunities to explore some of the important ramifications of each of the subjects pursued; (2) to show some of the vocational possibilities which grow out of different subjects; and (3) the presentation of material which is both worth while and pedagogically justifiable.[2] These courses have, within the first five years of their use, reduced the number of failures in difficult courses, they have led many pupils to engage happily and successfully in vocations discovered through the courses, and they seem to have led to an extraordinarily successful election of senior high school studies. That is, the organization of courses with reference to definite, comprehensive objectives has led to achievements which are not generally attained.

Mort and Devricks conducted an accounting of general values of the curricula of small high schools.[3] The criteria used in this accounting are the aims of education as stated by Parker.[4] One hundred eighty-three graduates of ten high schools were asked to rate the values of the curricular and noncurricular activities of the schools from which they had been graduated. Replies showed that the subjects as offered to and as estimated by these graduates vary widely in value for each of the five types of habits. Other judges or

[1] *Ibid.*, p. 6.
[2] See Chapter XIII for outlines of broadening and finding courses.
[3] Mort, P. R. and Devricks, R. K. "An Accounting of General Values in the Small High School Curriculum." *School Review*, XXIX, 119–134. February, 1921.
[4] Parker, S. C. *Methods of Teaching in High Schools.* Ginn and Company, 1915. P. 16.

the same judges under different conditions might have rated each of the subjects differently. Furthermore, the summary rating of total value should be understood as presenting only a summation of the estimated values for each type of habit; that is, the relative importance of the five types of habits is unknown. Consequently, a subject which is given a high rating in three of the habits and a low rating in the other two may or may not be as valuable as one which is given a low rating in two of the habits and a high rating in the others. So many subjective elements enter into such ratings of subjects that, like the ratings of the classics by various scholars, these judgments can be interpreted as only suggestive data. There are not at present objective results based upon a comparison of the attainments of schools whose curricula have been organized in response to detailed activity analyses with the attainments of schools whose curricula represent traditional practices.

How can objectives be attained? The curriculum maker may well ask at this point how the best formulation of objectives can be reflected in his program of studies. He may agree that a fuller and clearer statement of objectives than any now available is desirable. He may also agree that each item of subject matter should be included in a curriculum only after it has proved its value and its practicality for pupils in secondary schools. Even though one agrees to these and other implications of this and the preceding chapters, one has yet to set one's theories of education in operation: the necessity for a thoroughgoing coördination of curriculum values and practices is indicated by the investigations reviewed above.

The program for curriculum making begins with a survey of educational needs. This survey leads, by way of observation, analysis, and interpretation of life to the discovery

of educational values. When these values are integrated with subject matter and pupil activities, they form the basis for educational objectives. Each subject of the program of studies must be developed upon this pattern. Obviously, then, present-day curriculum planning must be limited by the incomplete results of present-day observation, analysis, and interpretation of life and by available subject matter. Two additional limitations exist: first, curricula planned with sound objectives and justifiable subject matter must be submitted to experimental teaching before they can be generally adopted; and, second, changes in curricula must be tempered to the communities in which they are to be offered.

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PART IV

PUPILS AND CURRICULA

CHAPTER XI

PUPIL EQUIPMENT AND CURRICULA

Self-realization through curriculum activities. Schools exist to aid pupils in self-realization, a process which takes place whenever an experience grips an individual's attention with sufficient force to draw out and lead to an expression of his capacities. As the term is used here, self-realization refers only to the stimulation and development of capacities which are defensible in the light of educational objectives. As a result of the study of science, one may, for example, display self-realization of one's capacity for understanding natural laws, or, as the result of the study of art, one may display self-realization of one's capacity for creating original designs.

Self-realization, or education, does not take place unless certain conditions are met. Some of the general principles which govern these conditions are well known. It is known that the educand, to be most effectively influenced by teaching, must be in a state of readiness as to maturity and attitude. It is known also that some teachers possess greater ability to induce favorable attitudes than others do, and that there are great differences among teachers in their abilities to impress educative experiences upon their pupils. Differences among schools, their equipment and management, are known to be reflected likewise by differences in results among learners. In keeping with these general principles, it is known that subjects, parts of subjects, or forms

of organization of subjects, call forth varying responses from different pupils. Finally, it is known that, in teaching, each pupil must be accepted as he is and, from his stage of development, be led to fuller self-realization by the best possible combination of the forces and capacities of the teacher, the school, the curriculum, and the pupil himself. For purposes of discussion, the equipment, interests, and needs of pupils are here treated in separate chapters. It is recognized, of course, that they are not actually separate, and in the succeeding discussions, certain topics which might well be treated in any of the three chapters will be found; for example, vocational aptitudes, interests, and equipment could be treated in this or the following chapter, but this topic will be left for final treatment in Chapter XIII.

The relation between pupil equipment and self-realization through curricula. All curricula are valuable only as they foster the attainment of educational objectives. This is equivalent to saying that all curricula are valuable only as they generate self-realization in pupils. Leaders in the several fields of secondary education have adopted this principle and have attempted the reconstruction of their subjects with reference to it. The report of the National Committee on Mathematical Requirements, for example, opens with a chapter on the aims of mathematical instruction.[1] In the terms of that report, the pursuit of mathematical studies educates a pupil only when it yields fairly definite practical, disciplinary, or cultural results. That is, if a pupil's equipment is such that he can be trained to think "in terms of and about relationships," he can derive "one of the most fundamental" disciplinary values from mathematical studies; otherwise, self-realization in this respect will not be effected. Or, if a pupil's equipment enables

[1] *The Reorganization of Mathematics in Secondary Education.* Pp. 5–12.

him to be trained to "appreciate" the "significance of formulas" and "to work out simple problems by setting up and solving the necessary equations," he can derive one of the essential practical values of mathematical studies; otherwise, self-realization in this respect will not be generated. Each of the other values of mathematical studies can be considered in the same manner; only those pupils whose equipment enables them to realize themselves in these desirable ways can profit by such studies.

Stated more specifically and in terms of the psychological problems to be met, one branch of mathematics, plane geometry, requires that pupils' equipment enable them to realize themselves through a complicated series of concepts and operations.[1] Among the elements of this series are seventy-one essentials, such as, "If two straight lines intersect, the vertical angles are equal," and, "In any circle angles at the center are proportional to the intercepted arcs." Furthermore, a technical vocabulary of six hundred items, such as *abbreviation*, *abscissa*, *congruent*, *comp.* (*complement*), and ∞ (*infinity*) must be developed. In addition to the "essentials" and the vocabulary there are two hundred eighty-eight main ideas which are the successful pupils' fundamental working tools. The main ideas are such as the following: "A broken line is made up of two or more connected segments;" "A quantity may be substituted for its equal in any operation;" and "If four numbers form a proportion, they are in proportion by inversion." For the theorem stated above, thirteen technical terms and six main ideas are required. Some other theorems require more technical knowledge, while still others require less. As the development of facility in the use of these fundamental

[1] Welte, H. D. *A Psychological Analysis of Plane Geometry.* University of Iowa Monographs in Education, 1926.

working tools is a prerequisite for the attainment of self-realization through geometry, and as these working tools require, in turn, a considerable native pupil equipment, plane geometry can obviously be justified only for certain persons and only under certain conditions. It can, of course, be admitted that a reduced form or amount of self-realization is possible for a pupil whose equipment disqualifies him for average achievement in this subject. It should be understood, however, that this point is the place at which discrepancies between alleged subject values and actual pupil achievement arise. If one discusses mathematical achievement in terms of reduced pupil equipment, one must recognize the necessity of reducing at the same time the expected values of the subject in question. Analogous conditions exist in regard to the other secondary school subjects.

The actual curriculum of each pupil is that which he traverses. This curriculum may be very different from the one which is indicated to the pupil's parents or to his teachers themselves. That is, if parents or teachers examine the values of any subject as the values are set forth in the printed discussions of the subject, possible values rather than certain values are likely to be suggested to them. These possible values may fail of realization partly because of the pupil's inadequate equipment for the mastery of the subject under existing teaching conditions.

Conceivably, if not obviously, there are pupils whose attainment of the values of a given subject is so slight as to make the pursuit of the subject undesirable for them. Certainly there is in schools a point below which pupils are not credited with the attainment of values, but are instead charged with failure to attain them. Above this point of failure there are pupils whose attainments are not believed by teachers to represent adequately the true and desired

values of any subject. Who can, on this basis, profitably pursue each curriculum?

Although this question raises a problem which was never a simple one, the difficulty of the problem has increased in modern times. Among primitive peoples, the old men usually decided by observation of individual youths the proper year for initiation into manhood; this observation by the elders, together with the ability to withstand the physical tests of the rites, measured the boy's fitness. With such peoples, discrimination was required between such objective matters as manly fortitude, cringing, and death. Among other peoples, pupils have been selected according to the social and economic attainments of their families. With such peoples, discrimination is required only between the rich and the poor or between the favored and the neglected. Among peoples of certain centuries, pupils have been selected with a view to the occupations which they expected to enter. With such peoples, discrimination is required only between candidates for "high" or "low" pursuits. Among the American people, pupils who have attained the age of twelve and who have completed six grades of school work are selected for secondary education — pupils who have attained the age of fourteen or fifteen are often allowed to waive the requirement that six grades be completed. With this people, discrimination would be only between the ages of twelve and fourteen or some such matter, were it not for the complicated character of secondary education — there are now many curricula each of which makes its own peculiar demands upon pupils. The above comparisons indicate changes in the philosophy of secondary education as well as in the character of curricula which adolescents traverse. As these changes have been operative in practice as well as in philosophy, the organiza-

tion of curricula for adolescents has become more difficult and more necessary than ever before. From the pupil's point of view, the choice of a curriculum has increased in difficulty, while, from the personnel worker's point of view, educational guidance has become more difficult and more necessary than formerly.

The effects of the popularization of secondary education are indicated also by comparisons between the high-school population of 1890 and that of the present time. In 1890, approximately one-tenth of America's adolescents entered high school, while at present the corresponding figure is considerably above one-third. Thorndike has computed the degree of selectiveness of the high school when only one in ten and when one in three enters high school. That is, by assuming a correlation of .70 between native capacity and the continuance to higher and higher grades, he is able to make the following comparisons: if only one in ten enters high school, 95 per cent of the entrants will be above average in native capacity, while, if one in three enters, only 83 per cent will be above average; in the former case, "seven-tenths of the pupils will be in the top fifth of human beings for intellect; in the latter case, only four and one-half tenths. If we set a forty-percentile human intellect as the minimum able to profit by the study of algebra (a first-year subject), there would be only 2½ per cent of pupils unable to profit in the one case as against 10 per cent in the other." [1]

An inventory of pupil equipment with reference to curricula. From primitive times to the present day, adolescents have been classified by teachers upon some kind of mental basis. The *Talmud* shows that the ancient Hebrews recog-

[1] Thorndike, E. L. and others. *The Psychology of Algebra.* The Macmillan Company, 1923. P. 6. See also pp. 1–8 for an elaboration of the above discussion.

nized four types of pupils: the sponge, who absorbed everything; the funnel, who retained nothing; the sieve, who caught only the illustrations and missed the main argument; and the winnow, who fanned away the unessentials and retained the solid portions.

Plato, in the *Republic*, described a system of educational guidance to discover and develop the capacities of each individual according to each person's equipment. Corresponding to individual differences, there were in his ideal state three classes of society: the philosophical or learned class, the soldier class, and the industrial class. Vives of the early modern period also presented a classification of pupils in *The Transmission of Knowledge*. There are, according to Vives, (1) acute, clear, and active minds which can see separate things clearly, but cannot see relationships or remember the separate items which they see; (2) minds which grasp facts, but which are stifled by a perpetual torpor, so that they do not reflect upon what they see; (3) minds which find the beginnings of things easy, but soon become dulled by a fog; (4) minds which are eager, strong, and steadfast; (5) minds which analyze; (6) minds which accept the analyses of others; (7) minds which strike at the root of things, and, of these, some hasten forward to new fields while others linger to leave their footprints behind; (8) minds which pursue quickly what they want; and (9) minds which are slow, and, of these, some advance further than others who were once before them, while others lag permanently.[1]

Probably no system of mental measurement will ever entirely supersede such subjective classifications of pupils as those of the *Talmud* or of Vives. Many of the descriptive terms employed in these classifications reappear in the

[1] *Op. cit.*, Chapter III.

names of modern tests; for example, an information test measures the characteristics referred to in the *Talmud* and some of those named by Vives. Useful as these terms are, however, they are not accurate enough, even with qualifying words, to indicate the strength of any trait; and they are not specific enough to indicate what combination of traits a pupil possesses. A pupil might, for example, be apparently defective in the ability to memorize traditional subject matter and still be able to memorize nonacademic matter. Such a condition is likely to be overlooked unless a comprehensive and searching inventory is made.

For such an inventory, modern devices of several types are available; permanent records, achievement tests, intelligence and aptitude tests, socio-economic ratings, and physical tests. Although these devices have not been widely and systematically employed, the situations in which they have been used are indicative that they are of great value in conducting pupil analyses. The first of these devices, permanent records, are, of course, not unlike the impressions made upon teachers who, in earlier and simpler school situations, have been able to observe the work of pupils over a long period of time. The need for special devices for recording permanent records has, however, increased as a result of conditions which now make a first-hand and thorough knowledge of pupils impossible. When, for example, each teacher meets her pupils for only one year or less and when, in the same school system, a new teacher becomes adviser to the pupils as they enter high school, it is obvious that the adviser cannot, without special devices, have as full knowledge of the pupils as he should have or as teachers in former days were usually able to have. If, in this hypothetical case, the adviser has access to a permanent record card for a pupil, that card will indicate the pupil's progress,

quality of achievement, regularity or irregularity of attendance, and, perhaps, the pupil's intelligence scores and physical equipment for the period covered by the card. Such a permanent record, when interpreted coöperatively by adviser and pupil, parents, principal, or teacher, has values which are too obvious to warrant further discussion in this treatise.

Achievement tests, since they have been made objective by standardization, are available for a more accurate invoicing of pupils' resources than are the unstandardized, informal tests which each teacher devises. Standard test results, if they have accumulated parallel to teachers' marks, supplement those marks for each year; if they are obtained by means of a single comprehensive test which measures proficiency in several subjects, the results supplement teachers' marks for at least one period. In either case the results of achievement tests are a valuable addition to the data recorded on permanent record cards.

Intelligence scores and socio-economic ratings have, as will be shown later, great value in school counseling. Although such scores and ratings are as yet imperfect, investigations have already proved their value as supplementary data for teachers and other advisers. The relative constancy of intelligence scores, as long as no unusual environmental changes take place, and the ease with which such scores are obtained make them the most convenient, if not the most reliable, prognostic inventory devices available. It is to be recognized that these scores and ratings, even when combined with grade-school achievement, do not always indicate with certainty and exactness the forthcoming achievements in any future academic undertaking. Apparent unreliability of tests may be due either to deficiencies in the tests themselves as measures of traits which they are designed

to measure or to the presence of important traits which the tests are not designed to measure. For example, the test may be too short to measure accurately, or, as Toops and Hughes point out, additional personal data and character traits may be neglected by the test.[1] As types of additional data which would aid in invoicing a pupil's equipment, the following may be suggested: information as to whether or not the pupil has, during his elementary school years, engaged extensively in extracurricular activities for either pleasure or profit; a standard rating of the pupil's home; and a statement of the pupil's rank in his elementary school — upper, middle, or lower third of his class. Furthermore, the results reported by Hughes indicate that the counselor should know the capacities, attitudes, and interests of the advisee.[2] It is to be recognized also that intelligence tests have become specialized so that some are valuable chiefly as indicating success in academic subjects, while others are valuable as indicating such a special ability as mechanical or musical aptitudes. Before intelligence scores and social ratings can be most effectively employed in an inventory, they must be combined and interpreted in the light of additional data and must be confirmed by the results of measures of special abilities and aptitudes.

Physical tests can be used to measure physical capacities and the pupil's program can be planned with reference to the test results and the pupil's interests. Such tests can indicate the quality of the assimilation of nutrition of the pupil, of his vision and hearing, pulse rate and recovery

[1] Toops, H. A. "What we are Failing to Measure in Education." *Journal of Educational Research*, XIII, 118–129, February, 1926. Also, Hughes, W. H. "Why Intelligence Scores are not more Highly Predictive of School Success." *Educational Administration and Supervision*, XII, 44–49. January, 1926.

[2] Hughes, W. H. "A Rating Scale for Individual Capacities, Attitudes, and Interests." *Journal of Educational Method*, 56–65. October, 1923.

after exercise, and can show his ability in such performances as running, jumping, the pull-up (chinning), and throwing.[1]

Present-day opportunities for discovering pupil's equipment are a challenge to curriculum makers as well as to pupil advisers. Since modern educational philosophy has favored the opening of secondary schools to all pupils who are above the level of morons, and since the schools have followed this theory in their practices, secondary schools have become schools for everyone. Failure to provide for these pupils of so widely varying abilities only stultifies the administrators of schools and makes the schools nearly if not quite valueless for many pupils who are urged, if not compelled, to attend school. Modern practice no longer permits selective elimination of pupils. Pupil classification and the differentiation of curricula to meet the classification are, therefore, necessary.

Examples of the use of pupil-inventories in the prognosis of success in secondary schools. It has been said above that all curricula are valuable only as they generate self-realization by pupils. If this principle be accepted in combination with present-day knowledge of individual differences, then one may say also that different pupils will vary greatly in the amounts and kinds of self-realization which they attain in different curricula. Although all self-realization is desirable insofar as it conforms with educational objectives, there are many instances in which it is meager in amount and negligible in quality. The curriculum maker needs to know at what point a school ceases to produce a profitable return for a fair amount of pupil effort. Equipped with this information, he may conclude that an improvement of the school should be made in one or more of the following re-

[1] Cf. Wood, T. D. and Brownell, C. L. *Source Book in Health and Physical Education.* The Macmillan Company, 1925. Chapter XVIII.

spects: pupils may be advised to substitute certain courses which are promising for others in which they would probably fail; teachers may be advised to offer their courses more effectively; new curricula may be organized; or pupils may be allowed to carry reduced programs. It is clear, however, that drastic measures should await the amassing of reliable data as to pupil accomplishment. Samples of available data and their uses will be reviewed.

Proctor discovered in 1918 that, in the schools of Palo Alto, certain pupils had been annually adjudged failures. In the ordinary course of events, he found that in one group of pupils 30.8 per cent failed in one subject and 10.3 per cent in two or more subjects. By experimentation with pupil inventories and counseling, he found that failure could be reduced to 18.2 per cent in one subject with no pupils failing in two or more subjects. A subsequent check-up made in 1923, revealed the same relative success of the counseled and the uncounseled groups of pupils.[1]

Miss Cobb found that at varying intelligence limits the pupils of a group of Michigan schools fell below a passing mark. That is, in Alma, Mt. Clemens, Mt. Pleasant, Milan, and Detroit, the median intelligence scores of the pupils who failed in algebra were 78, 89, 65, 75, and 84, respectively.[2] From these data, one may judge that a pupil does not ordinarily derive a reasonable return from algebra in these schools unless his intelligence score is somewhat above 80. It is true, of course, that unusual diligence on the part of a pupil or a combination of unusually favorable teaching conditions might justify such a pupil's electing algebra. As

[1] Proctor, W. M. *Educational and Vocational Guidance.* Houghton Mifflin Company, 1925. Pp. 148–149.

[2] Uhl, W. L. *Principles of Secondary Education.* Silver, Burdett and Company, 1924. Pp. 292–293. "Army Alpha" scores are the basis of the above ratings.

a prescribed subject, algebra would, however, be of questionable value so far as these data are representative.

A varied group of thirty Spokane pupils was given the Stanford Revision of the Binet-Simon Test. Upon the basis of the test results, the pupils' interests, and previous records, these pupils were advised by their elementary school principal to take certain high-school courses. All but one pupil took the work which the principal advised. At the end of the first semester, the one pupil who disregarded the advice had failed in three of the four subjects which she had elected. One pupil failed in two subjects on account of protracted illness and one failed in one subject because, according to his story, his teacher was "no good." One pupil failed in one subject without any apparently good reason, and one other missed a final examination in one subject. Successful grades were made in all other cases. As the pupils' intelligence quotients ranged from 74 to 157, and as their subsequent academic prospects were very different, some of them pursued traditional college preparatory courses, while others pursued curricula which were closely related to the work of their prospective vocations. Three cases from this group will serve to illustrate the different chronological ages, abilities, and opportunities of this class and the needs for differentiated curricula:

Number 1 (C. A., 11–4; M. A., 17–10; I. Q., 157; Otis score, 159; school averages: VIII–A, 90 and high school, 92) is fortunate in her parents who are graduates of well-known universities and take an active part in the civic and social life of the city. She had private lessons in French, music, and public speaking during her last three years in the grades. She finished the eighth grade in one semester. She seldom volunteered an answer but when called on was always ready to give most comprehensive replies. She played with girls of her own age with great pleasure, but suffered no embarrassment in her association with the pupils in her class. She

has never spent much time outside of school studying school lessons, but has maintained the high rank in her class which is to be expected from her unusual I. Q. I advised the classical course since she will go to college. English, algebra, and Latin are required in this course, and she chose history as her elective. Her ratings in these subjects were: English, 91; algebra, 92; and history, 92.

Number 21 (C. A., 13–7; M. A., 13–1; I. Q., 96; Otis score, 118; school averages: VIII–A, 85 and high school, 77.5) was quiet, dreamy, rather unreliable in character. The boys did not like him and seldom included him in their games. Since he expects to assist his father in a mercantile business when he leaves high school, I advised English, bookkeeping, general science, and arithmetic. He accepted my advice. His grades were 80 in English, 80 in bookkeeping, 72 in general science, and 78 in arithmetic. His failure in general science was not a surprise, as his VIII–A work had been done under constant prodding.

Number 30 (C. A., 16–9; M. A., 11–11; I. Q., 74; Otis score, 84; school averages: VIII–A, 64; and high school, 87) is neurotic. She did not do her VIII–A work well enough to win a regular promotion. Her rather unfavorable home conditions, as well as her age, made it seem advisable to send her to high school for industrial work. I advised English, printing, general science, and chorus. She remained in school one year, and then entered a hospital to take nurses' training. She has passed her probation period successfully. With an I. Q. of 74 she seems dangerous there. She did well in printing and enjoyed it. She passed in general science and English and played first violin in the orchestra.[1]

The Terman Group Test of Mental Ability and sections one to four of the six sections of the Wilkins Prognosis Test in Modern Languages were given in 1923 by Jordan to 108 Independence, Missouri, pupils in beginning language courses. The Wilkins test was given also to 81 such pupils in 1922. All the 189 pupils were admitted to language

[1] Sara E. Weisman. "A Study of the Use of the Standard Revision of the Binet-Simon Test as a Guide to Selection of High-School Courses." *Journal of Educational Research*, VII, 137–144. February, 1923.

classes without being informed of or otherwise guided by the results of the tests; later, Jordan studied the grades achieved in Latin, French, and Spanish in connection with the test scores. Of the twenty-four pupils who made scores of 300 or less on the Wilkins test in 1922, twenty-one, or 87.5 per cent, were marked "Inferior" or "Failure" by their teachers who did not know the test scores. Of the fifty-nine pupils whose scores were 300 or less in 1923, twenty-seven, or 45.8 per cent, were marked "Inferior" or "Failure" by their teachers. Of the pupils whose test scores were above 300, 87.7 per cent and 69.4 per cent were given satisfactory marks at the end of the years 1922–23 and 1923–24, respectively. The Terman test scores were treated similarly: of the fifty-seven pupils whose intelligence quotients fell below 100, thirty-three, or 57.9 per cent, were marked "Inferior" or "Failure" by their language teachers; of the pupils with intelligence quotients of 100 or higher, 82.4 per cent were given satisfactory marks. Jordan suggests that, although his results show discrepancies between test scores and language achievement, the test scores do indicate the probabilities of success or failure, and that it might be wise to apprise certain pupils of the need for intense efforts in case language be elected by them.[1]

The intelligence scores and accomplishments in physics were obtained by Hurd for fifty-eight Minneapolis pupils.[2] Success in physics was measured by twelve comprehensive tests on as many units of the physics course. Each test consisted of at least two sections — a test of information and a test of ability to solve problems. The Pearsonian coefficient of correlation between the intelligence quotients

[1] Jordan, J. N. "Prognosis in Foreign Language in Secondary Schools." *School Review*, XXXIII, 541–546. September, 1925.

[2] Hurd, A. W. "The Intelligence Quotient as a Prognosis of Success in Physics." *School Review*, XXXIV, 123–128. February, 1926.

and the physics test scores was .76 ± .03. The mean intelligence quotient was 107.7. Of the pupils whose intelligence quotients were above the mean, 66.7 per cent obtained higher than mean scores on the physics tests; and of those whose intelligence quotients were below the mean 18.5 per cent obtained physics scores higher than the mean. Hurd concluded that the intelligence scores alone detected 78 per cent of the pupils who will do satisfactory work in physics, and that it might be possible by character-trait and interest ratings and previous school marks to detect the 22 per cent who will not do good work. He agrees with Jordan that pupils with low intelligence quotients may at times be informed of their hazardous undertaking when they enroll in such a subject as physics and that the need for diligence should be impressed upon them.

The relationship between reading ability and scholastic achievement has been pointed out by many writers.[1] Dickinson conducted a detailed inquiry into the reading abilities of 149 Ft. Wayne pupils and their classroom achievement. He found that the pupils who achieved most or least in reading tests also achieved most or least, respectively, in school subjects. An analysis of the specific elements involved in the tests and in the school subjects led him to believe that common elements underlie success either in reading or in other subjects such as mathematics, history, science, foreign language, and music. The outcome of such investigations seems to point to the advisability of detecting pupils who, by the end of Grade VI, have not gained a high degree of mastery of reading, and then either giving them remedial work in reading or advising them to follow curricula in which reading abilities are relatively

[1] Cf. W. L. Uhl, *The Materials of Reading.* Silver, Burdett and Company, 1924. Pp. 282–286.

less important than they are in a college-preparatory curriculum.[1]

Records for 259 St. Louis high-school pupils have been compiled by Shewman to show the relation between intelligence as measured by the Terman Group Test of Mental Ability, Form A, and achievement as indicated by teachers' marks. Table VII shows that the value of this test for

TABLE VII

THE RELATION BETWEEN THE INTELLIGENCE QUOTIENTS AND THE ACHIEVEMENT OF 259 ST. LOUIS HIGH-SCHOOL PUPILS *

	NUMBER OF PUPILS	MEDIAN I.Q.'S OF PUPILS	MEDIAN MARKS OF PUPILS	PERCENTAGE OF CORRELATION BETWEEN I.Q.'S AND MARKS
Average achievement	259	105.1	77.7	49.5
English	260	104.9	78.4	70.0
Foreign language	204	104.8	75.1	63.2
Mathematics	191	106.6	77.0	48.6
Science	248	104.6	78.1	46.0
Commercial subjects	90	103.9	81.8	43.2
Social science	257	105.6	78.6	42.4
Manual arts	112	102.1	82.2	18.6

* Adapted from data in Shewman's article.

prognosis varies greatly for such subjects as English and manual arts. It indicates also that the rigor of mathematics is greater for pupils of the highest intelligence group than are the rigors of commercial subjects and manual arts for pupils of the lowest groups. By using Form B of the same test with the same pupils seven semesters later, Shewman found a correlation of .77 with the original scores. In individual cases, however, he found a few wide variations. For example, "those with I. Q.'s from 100.0 to 104.9 in the

[1] Dickinson, C. E. "A Study of the Relation of Reading Ability to Scholastic Achievement." *School Review*, XXXIII, 616–626. October, 1925.

retest show a range in I. Q.'s in the original test from 80.0 to 124.9, and those with I. Q.'s in the retest from 110.0 to 114.9 had I. Q.'s from 90.0 to 139.9 on the first test." With regard to curriculum guidance, Shewman concluded that pupils whose intelligence scores with the Terman test may properly be advised to pursue manual arts and commercial subjects and that such pupils should avoid foreign languages and mathematics.[1]

If any stigmata still cling to pupils who are judged by academic "general" intelligence tests to be low in mentality, the findings of Stenquist may remove them. He found that, for groups of seventh- and eighth-grade boys, ranging from 100 to 296 in number, the coefficients of correlation ranged from .23 ± .04 to .34 ± .03 between "general" intelligence test results and the results of Stenquist's tests of mechanical aptitudes. As the Stenquist test results give a high correlation with grades in shop courses, it may be concluded that a very common variety of general intelligence is overlooked by most intelligence tests.[2]

Brooks compared different kinds of measures of ninety-three Baltimore pupils' equipment, previous school marks and the results of both intelligence and achievement tests, as a basis for dividing a junior high-school class into three sections. Table VIII shows the results of this study. This table indicates, for example, that if sixth-grade marks are combined with Haggerty test results, 73.1 per cent of the pupils will be placed in the same section as they would be had they been grouped according to the grades which they

[1] Shewman, W. D. "A Study of the Intelligence and Achievement of the June, 1925, Graduating Class of the Grover Cleveland High School St. Louis." *School Review*, XXXIV, 137–146 and 219–226. February and March, 1926.

[2] Stenquist, J. L. "The Case for the Low I. Q." *Journal of Educational Research*, IV, 241–254. November, 1921. Also reprinted in W. L. Uhl, *Principles of Secondary Education*, 312–321. Also, see W. M. Proctor, *Educational and Vocational Guidance*. Ch. IV.

actually made during the year; while 25.8 per cent were displaced one section, and 1.1 per cent were displaced two sections. Brooks adds that, "Combining the results of a group intelligence test with sixth-grade marks, and taking

TABLE VIII

PER CENT OF AGREEMENT OF SECTIONING BY TESTS AND SCHOOL MARKS WITH SECTIONING BY CRITERION OF SCHOLARSHIP IN FIRST YEAR OF JUNIOR HIGH SCHOOL. THREE-FOLD GROUPING.

BASIS OF SECTIONING	CORRECTLY SECTIONED	DISPLACED ONE SECTION	DISPLACED TWO SECTIONS
Miller (IQ)	54.8	40.9	4.3
Otis (IQ)	61.3	35.7	3.0
Illinois (IQ)	45.2	47.3	7.5
Terman (IQ)	63.4	32.3	4.3
Haggerty (IQ)	57.0	38.7	4.3
National Intelligence Test (IQ)	59.1	36.6	4.3
Dearborn C (IQ)	54.8	43.0	2.2
Dearborn D (IQ)	52.7	40.8	6.5
Pintner	49.5	39.7	10.8
Mean Group Intelligence Tests	55.3	39.4	5.2
Thorndike-McCall	50.5	40.9	8.6
Woody-McCall	52.7	34.4	12.9
Holley Vocabulary	45.2	43.0	11.8
Kelley-Trabue	39.8	45.1	15.1
Group Vocabulary *	47.3	40.9	11.8
Mean Achievement Tests	47.1	40.9	12.0
Stanford-Binet (IQ)	64.5	30.1	5.4
Chronological Age	51.6	40.9	7.5
Sixth-Grade Marks	63.4	34.4	2.2
Combination of Sixth-Grade Marks and Haggerty (IQ)	73.1	25.8	1.1

* Group vocabulary test made by using first list of Stanford-Binet vocabulary.

into consideration chronological age, we have a fairly accurate basis for sectioning entering junior high-school pupils, a basis more accurate than any one of the three elements of which it is composed. Undoubtedly other factors are present, but they have not been adequately analyzed or estimated.

Certain volitional, emotional, or interest factors may eventually be found to add much to a composite prognosis measure. Absolutely perfect predictive measures may never be found just because growth or development may of itself introduce a certain amount of change or variation which will continue to elude accurate estimate." [1]

Important beginnings have already been made in determining the characteristics of the personality traits which supplement or detract from a pupil's ability thus to reduce the reliability of intelligence scores. Besides the devising of will-temperament tests,[2] still further refinement is necessary in social ratings and studies of the influences of social and economic status upon general mental equipment.[3]

[1] Brooks, F. D. "Sectioning Junior High-School Pupils by Tests and School Marks." *Journal of Educational Research*, XII, 359–369. December, 1925.

[2] Downey, June E. *The Will-Temperament and Its Testing.* World Book Company, 1923.

[3] Cf. J. C. Chapman and V. M. Sims, "The Quantitative Measurement of Certain Aspects of Socio-Economic Status," *Journal of Educational Psychology*, XVI, 380–390, September, 1925; and S. A. Courtis, "The Influence of Certain Social Factors upon Scores in the Standford Achievement Tests," *Journal of Educational Research*, XIII, 311–324. May, 1926.

(For bibliography, see end of Chapter XIII.)

CHAPTER XII

PUPIL INTERESTS AND CURRICULA

The nature of pupil interests. Although interests are discussed freely by the populace, their technical nature is still baffling to the psychologist. Varying explanations of the character and meaning of interests are therefore extant. There seems, however, to be no doubt that some persons are stimulated by inner urge or outer push or pull so that they persist effectively at certain tasks, while other persons, despite their marked ability, readily desist from any or all serious undertakings. Whether general interests or many specific interests provide motive power for the industrious, whether interests spring into being full-blown or develop gradually from many varied experiences, whether interests are dependent upon a school subject or upon the manner in which it is presented, or whether interests are evidences of independence or of docility, the case is clear that certain pupils willingly devote themselves to science, mathematics, and Latin, while others, revolting against this trio, seek art, music, and literature. In short, the nature of interest may be only vaguely known, but the evidences of its driving power are manifest.

Interests of children often play odd caprices with parents and teachers. Pupils who have been adjudged dullards have often achieved remarkable feats. Luther Burbank lived to make the deserts bloom; Francis Thompson to charm the lover of fine verse; and Thomas Edison to lead

the vanguard of electrical explorers. Ancient methods of discovering what a boy could do by scanning his achievement ratings often led to the neglect of an additional element interest. Modern devices for measuring general ability tend likewise to neglect an element which may drive a boy toward or away from the activity proposed by his schoolmaster. As the advisers of Francis Thompson and Robert Louis Stevenson would have them trained for medicine and engineering, so present-day advisers are prone to discover only that a boy will or will not apply himself to Latin or algebra or science.

This case is still further complicated by the fact that one teacher finds a boy listless, inaccurate, and unwilling in mathematics, while another teacher finds or leaves the same boy alert, accurate, and industrious in the same subject; that is, there are individual differences among pupils in interests as in other traits. Again, a pupil brightens in the presence of a book of his own choosing, but scorns the efforts of his teacher to cultivate appreciation of academic literature — interests indicate a tendency toward self-realization. Furthermore, the case of interests is complicated by the fact that many teachers make no effort either to utilize the tendencies which, when unguided, often injure the possessor, or to cultivate, in their place, strong substitutes; instead, attempts at suppression are made which lead to consequent new and often undesirable interests. Finally, the contagion of interests, though understood but vaguely, accompanies favorable contacts with pupils as well as with teachers.

The general nature of pupils' interests can be clarified by a simple classification of them. The purposes of the present discussion will be fulfilled by classifying the motivating elements into two groups, satisfiers and annoyers. This

classification, which finds support among both introspective and behavioristic psychologists, resolves itself into:

three laws of readiness and unreadiness: (1) that *when a conduction unit is ready to conduct, conduction by it is satisfying, nothing being done to alter its action;* (2) that *for a conduction unit ready to conduct not to conduct is a oying, and provokes whatever responses nature provides in connection with that particular annoying lack;* (3) that *when a conduction unit unready for conduction is forced to conduct, conduction by it is annoying.*[1]

The operation of these laws is not simple. The readiness or unreadiness of a conduction unit is, of course, determined by the pupil's native equipment, his past experience, and his present state of mind. As past experience and present state of mind are dependent upon such variables as subject matter already mastered, upon personal ambitions, and upon teachers and classmates, the operation of these laws leads to such varied conditions and caprices as those described in the foregoing paragraphs. Another series of complexities results from the fact that many psychological situations demand experimentation before the correct response can be discovered. In such cases, a persistent individual performs a series of responses before he finds one which is satisfying; that is, he is annoyed by an unsolved situation until at last he finds and is gratified by a key to the situation. A conduction unit may, therefore, be ready or unready according to whether or not a certain stage of academic progress has been achieved, or a favorable background has been developed, or a pupil's temperament incites him to persistent action.

[1] Thorndike, E. L. *The Original Nature of Man.* Teachers College, Columbia University, 1913. P. 128. For a more extended account of these laws, J. A. Comenius, *The Great Didactic* (Trans. by M. W. Keatinge), Chapters XVI–XVII (A. and C. Black, 1896).

It is with such problems as these in their relation to curricula that this chapter deals. It will, therefore, treat investigations of the permanence and significance of vocational interests, interests in extracurricular activities in different school subjects, and the cultivation and utilization of interests as they influence pupils' choices of subjects and the quality of their work.

The permanence and significance of interests. The importance of interests depends upon their permanence, their intensity, and their relationship to educational values. The permanence and intensity of interests have been investigated statistically and experimentally. Franklin examined the permanence of the vocational interests of 1467 entering pupils of ten junior high schools of Baltimore.[1] These pupils were given general intelligence and special aptitude tests and were asked on four different dates — December, 1922, and May, October, and December, 1923 — to state their vocational, academic, and recreational interests. Franklin found a permanence of 66.7 per cent for vocational interests. Analysis of the questionnaires and the pupils' work showed that a large number of the pupils who changed did so for good reasons, such as "new interests developed through studies and out-of-door activities, weaknesses revealed through school failures, and altered financial circumstances."[2] He found also that more than 92 per cent of the pupils selected the curricula which best fitted their vocational interests and that the special aptitude test indicated the wisdom of the choices made. Proctor's results from the use of the questionnaire method of exploring the interests of pupils over a long period of time corroborate Franklin's

[1] Franklin, E. E. *The Permanence of the Vocational Interests of Junior High School Pupils. Johns Hopkins University Studies in Education,* No. 8, 1924.

[2] *Ibid.,* p. 55.

conclusions.[1] Both these investigations indicate that fairly dependable interests can be utilized in the choice of curricula and in the motivation of school work. They suggest also the importance of providing intelligent counsel for high-school pupils during their exploratory years of schooling. Kefauver's investigation of the relation between the life-career motive and its effect upon the high-school work of pupils in the Fresno schools indicates, however, that caution must be used in evaluating the motivating effect of the life-career plans.[2] It may be that other equally potent motives impel pupils who have not yet chosen their vocations. At any rate, in accounting for the apparent failure of the life-career motive to improve the quality of work done, Kefauver states that, although all the pupils with vocational choices considered their school work as preparation for their chosen occupations, this "motive might have a greater influence if pupils could see a more direct relation between school courses and future vocational work." The pertinency of this comment is supported by the following review of Book's study of incentives in relation to learning.

The relative intensity and importance of interests in different learning situations have been investigated experimentally by Book and others.[3] Four types of learning were experimented upon: the first, making the letter *a* as accurately and rapidly as possible, which was for college students mainly a muscular feat; the second, crossing out letters in disconnected Spanish, involving discrimination, skill in eye-

[1] Proctor, W. M. *Educational and Vocational Guidance.* Houghton Mifflin Company, 1925. Pp. 67ff.

[2] Kefauver, G. N. "The Life-Career Motive and its Effect on High-School Work." *School Review*, XXXIV, 426–430. June, 1926.

[3] Book W. F., and Norvell, Lee. "The Will to Learn; an Experimental Study of Incentives in Learning." *Pedagogical Seminary*, XXIX, 305–362. December, 1922. This article contains an extended review of earlier related investigations.

movements, and coördination of certain perceptual and motor processes; the third, acquiring a set of psychophysical habits in transmuting and arranging letters and digits; the fourth, two-place multiplication, involved a purely mental feat. For the stimulus group of subjects, attempts were made to increase interest by keeping them informed of their records, by insisting to each subject that he could and should make better records, by urging the subjects to do their best at the beginning of each practice period, and by urging them to analyze their scores and methods and discover best ways of working. It was found that the interest in improvement served as a valuable directive force and that it led to favorable mental adaptation and the formation of improved methods of work. The experience of the control group of subjects who were deprived of stimulating suggestions, indicated that the

reason why so many learners fail to make the improvement which they really should make may be due to any one or some combination of the following causes: (1) They may feel that they have more important things to do and so are not interested in their improvement as such. They will, therefore, not make themselves rise above the common level of mediocrity. (2) They may desire to improve but do not care enough about the improvement to put forth the effort that is required to develop the new and more economical methods of control. (3) They may need specific direction and help because they do not know how to direct their own practice. (4) They may be unable to put forth enough effort to carry on the ceaseless experimentation which is required to enable them to discover the more economical methods of control for themselves. Better methods, better directed learning, more zeal, actual interest or motivation and a firm belief in the possibility of success sum it all up. It is a deficiency in one or more of these respects that accounts for the failure of most or all individuals to make their rate of improvement steady and continuous.[1]

[1] *Ibid.*, p. 361.

These findings are significant for curriculum planning because, as will be shown in Chapter XV, methods and materials of instruction are inseparable and because the findings affect the planning and administering of curricula. If one may follow Book and state, as a general principle, that a pupil's knowledge of results achieved by himself, his interest in progress, and his ability and willingness to devise improved methods of work are the accompaniments of profitable educational endeavor, then the indictment of inadequate curriculum administration is evident; for pupils are often herded into classes the teachers of which are mediocre and in which the adverse learning conditions imposed upon Book's control subjects prevail. College students assert that such conditions actually do prevail in certain high schools. The following statements from the writer's college students are samples of the provisions which Book found unfavorable for learning. "The principal shoved me into any class that was open or left me to choose for myself"; "I heard the principal tell a girl to take biology although she wished to take chemistry as preparatory to college work in home economics"; "We were forced to make out our programs in a huge rush sometime during the first half-day of the year; as we had no advice, we chose 'soft' electives and got little from them."

Still other cases which are better adapted for teaching pupils to fail than to improve can be cited as examples of the four causes for failure quoted above from Book. First, thousands of pupils who are able and interested in certain subjects are compelled to pursue other subjects, the teachers of which are unable to convince their pupils of the merit of the subjects or parts of subjects. Second, pupils are often deterred from rather than inspired to greater effort by ill-chosen comments of teachers or a failure of teachers to

show reasons for earnest pupil-effort, as in the case of many courses in physics and chemistry when required of girls, but taught by persons who are ignorant of the possibilities of such subjects in the lives of girls. Third, pupils in English composition, mathematics, and other subjects often make futile efforts because of the failure of teachers to direct study. Fourth, unless pupils are shown objectively the value of their somewhat inadequate efforts, they often see no reason why they should persist in their experiments of trying to master difficulties.[1]

Investigations of pupils' interests in school subjects. This section presents the results of investigations of pupils' interests in school subjects and, where possible, some of the consequences of these interests. The reader will recognize the necessity for appraising these investigations in the light of the many influences which may affect an avowed interest in a subject. That is, an investigation may reveal lasting, universal interests, or it may reveal localized, transient interests caused by ease or newness of a subject, by the teacher's skill, by real or alleged vocational opportunities, or by legislation by schools or state departments.

Many attempts have been made to discover the relative amounts of interest in different subjects. Brown and Minnick obtained a ranking of subjects according to the preferences of 2097 high-school pupils.[2] These pupils were asked to rank in order of their preferences the subjects which they had studied or were studying, to evaluate those subjects, and to name any subject which, if they were permitted to do so, they would drop. Table IX shows the

[1] See Comenius, *op. cit.*, for an especially clear elaboration of these principles.

[2] Brown, J. C. and Minnick, J. H. "A Study of the Preferences of Secondary School Pupils for the Various Subjects." *Educational Administration and Supervision*, I, 527–545 and 599–610. October and November, 1915.

ranking of subjects by the pupils of the Horace Mann Schools according to first choices and the percentages of pupils who wish to drop them; for example, chemistry is the first choice of boys and English is the first choice of girls, while Latin is the subject which the highest percentages of both boys and girls would drop, and no girls would drop physics, hygiene, or chemistry.

TABLE IX

RANKING OF SUBJECTS BY PUPILS OF HORACE MANN SCHOOLS *

(The numerals in the right-hand columns indicate the percentages of pupils wishing to drop the subjects)

RANK	RANKING OF SUBJECTS BY FIRST CHOICE		RANKING OF SUBJECTS UPON THE BASIS OF PERCENTAGES OF PUPILS WISHING TO DROP THEM	
	Boys	Girls	Boys	Girls
1	Chemistry	English	Arithmetic, 0	Physics, 0
2	Algebra	History	Geography, 2	Hygiene, 0
3	Geometry	Arithmetic	English, 5	Chemistry, 0
4	Manual Training	Trigonometry	Physics, 6	Geography, 2
5	English	Geometry	Chemistry, 9	English, 3
6	Hygiene	Household Arts	Algebra, 9	Trigonometry, 7
7	History	Geography	Geometry, 10	Algebra, 8
8	Arithmetic	Latin	Manual Training, 10	History, 10
9	German	German	German, 10	Household Arts, 11
10	Latin	French	French, 13	French, 11
11	Physics	Algebra	History, 17	Arithmetic, 14
12	French	Physics	Trigonometry, 17	Geometry, 20
13	Geography	Hygiene	Hygiene, 24	German, 21
14	Art	Chemistry	Art, 40	Art, 26
15	Trigonometry	Art	Latin, 42	Latin, 35

* Adapted from Tables II and XIII of Brown and Minnick.

This investigation was later extended to include 1,600 high-school pupils of Decatur, Illinois; Dubuque, Iowa; and New Jersey. Table X shows the ranks of subjects by first choices in these schools, and Table XI shows the ranks based upon the percentages of pupils who wish to drop them.

TABLE X

RANKING OF SUBJECTS BY PUPILS OF DECATUR, DUBUQUE, AND HACKENSACK

(This ranking is upon the basis of first choices among the subjects studied.) *

	DECATUR		DUBUQUE		HACKENSACK	
	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
1	Bookkeeping	Stenography	Trigonometry	Grammar	Arithmetic	Domestic Science
2	Algebra	Bookkeeping	Chemistry	English	Bookkeeping	Arithmetic
3	Mechanical Drawing	English	Manual Training	Domestic Science	Geometry	Bookkeeping
4	Arithmetic	Domestic Science	Physics	Typewriting	Algebra	Spanish
5	Manual Training	Art	Bookkeeping	Stenography	Physics	Typewriting
6	Physics	Algebra	Grammar	Latin	Spanish	Stenography
7	Physical Geography	Physics	Mechanical Drawing	Geometry	Typewriting	English
8	Chemistry	Arithmetic	Geometry	Bookkeeping	Stenography	Algebra
9	Geometry	Typewriting	English	Arithmetic	Trigonometry	German
10	Typewriting	German	Economics	Psychology	English	Geometry
11	English	Latin	Algebra	Algebra	Chemistry	French

12	German	Chemistry	Stenography	Physics	Elementary Science	Civics
13	Civics	Civics	Arithmetic	Chemistry	Geography	Art
14	History	Psychology	History	German	Penmanship	Chemistry
15	Zoölogy	Botany	Typewriting	Physical Geography	German	History
16	Latin	History	German	History	History	Physical Geography
17	Stenography	Geometry	French		Manual Training	Latin
18	Art	Physical Geography	Latin		Latin	Geography
19	Botany	Zoölogy	Physical Geography		Physical Geography	Elementary Science
20	Physiology	Grammar			French	Physics
21	Grammar				Grammar	Grammar
22	Geography					Penmanship
23						Manual Training

* *Ibid.*

TABLE XI

RANKING OF SUBJECTS BY PUPILS OF DECATUR, DUBUQUE, AND HACKENSACK

(This ranking is upon the basis of the percentages of pupils who wish to drop each subject.)*

	DECATUR		DUBUQUE		HACKENSACK	
	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
1	Botany, 0	Botany, 0	Arithmetic, 0	Arithmetic, 0	Grammar, 0	Grammar, 0
2	Chemistry, 0	Chemistry, 0	Grammar, 0	Grammar, 0	Spanish, 0	Geography, 0
3	Physiology, 0	Physiology, 0	Typewriting, 0	Psychology, 0	Geometry, 2	Penmanship, 0
4	Grammar, 0	Grammar, 0	English, 2	Stenography, 0	Stenography, 3	Civics, 1
5	Geography, 0	English, 4	Bookkeeping, 4	Typewriting, 0	Arithmetic, 4	English, 2
6	Arithmetic, 1	Algebra, 6	Physics, 5	English, 4	Geography, 4.1	Stenography, 2.4
7	Bookkeeping, 4	Arithmetic, 8	Algebra, 9	Domestic Science, 9	Physical Geography, 6.9	Typewriting, 5
8	Algebra, 6	Domestic Science, 8.2	Mechanical Drawing, 10	Bookkeeping, 19	Trigonometry, 7.3	French, 7
9	Civics, 7	Typewriting, 10	Stenography, 10	Geometry, 22	Bookkeeping, 8	Arithmetic, 11
10	Mechanical Drawing, 8	Stenography, 11	Manual Training, 13	Latin, 23	English, 9	German, 13
11	English, 9	Physical Geography, 12	Chemistry, 13.6	German, 24	Typewriting, 9.3	Domestic Science, 15

12	Physics, 10	Latin, 14	Geometry, 13.7	Algebra, 29	Algebra, 9.5	Art, 16.8
13	Physical Geography, 14	German, 16	Economics, 18	Physical Geography, 31	Chemistry, 10	Bookkeeping, 17.3
14	Art, 14	Art, 17	Trigonometry, 19	Physics, 32	Penmanship, 10	Geometry, 18
15	Typewriting, 15	Bookkeeping, 18	Physical Geography, 22	History, 40	Elementary Science, 17	Spanish, 20
16	Manual Training, 18	Civics, 18	History, 27	Chemistry, 67	Manual Training, 18.8	Algebra, 20.4
17	Geometry, 22	History, 35	German, 30		Physics, 19.2	History, 27
18	Latin, 25	Geometry, 41	Latin, 35		German, 24	Latin, 28
19	History, 28	Zoölogy, 42	French, 42		French, 24.3	Chemistry, 36
20	German, 28.3	Physics, 46			Latin, 32	Physics, 40
21	Stenography, 60				History, 34	Manual Training, 46
22	Zoölogy, 75					Elementary Science, 56
23						Physical Geography, 86

* *Ibid.*

A comparison of these tables shows that either the pupils of some of these schools have different fundamental interests or else that the subjects are differently administered in different schools. As examples, algebra attains second rank for boys in the Horace Mann School and in Decatur, and thirteenth in Dubuque; history attains second rank in the Horace Mann School for girls and the fourteenth and sixteenth places, respectively, in Dubuque and Decatur. A comparison of the different columns of Table XI shows that an unfavorable ranking of subjects by first choices need not indicate a pupil's wish to drop them. For example, chemistry ranks fourteenth for girls in the Horace Mann School, although no girls wish to drop it; a similar condition is shown for Decatur boys in the case of botany. The value of certain subjects appears to vary greatly among schools as in the case of chemistry which no girls wish to drop in the Horace Mann School or in Decatur, while 36 per cent would drop it in Hackensack and 67 per cent in Dubuque.

If reference be made to Book's comments as quoted on p. 382, it will be observed that he summarized under four headings reasons for failing to learn: (1) the apparent unimportance of the matter to be learned; (2) the lack of motivation; (3) the lack of directed study; and (4) the lack of persistence in the face of difficulty. Three, and possibly all four, of these points are reflected in the reasons why pupils wish to drop subjects; that is, they allege that the subjects are of no use, uninteresting, or too difficult. If Book's conclusions are correct and if the pupils expressed their own attitudes correctly, there is good reason to say that the pupils should drop certain subjects unless the conducting of the activities in the subjects can be changed — there is no good reason for a pupil's pursuing a subject under conditions which psychologists find most inimical to learning.

This statement does not, however, indicate that any pupil ought to drop any subject; it indicates only that probably many pupils should discontinue subjects until teaching and learning conditions improve. That pupils can, however, be induced to pursue and to value a distasteful subject is indicated by the case of grammar in these public high schools which were investigated. There are many implications in these tables to the effect that pupils' interests in subjects are due to something outside the subject as taught in certain schools. The tables seem to indicate also that many subjects which are, in certain schools, of little interest are made vital and important in other schools. Unless the needs of pupils require the substitution of a new subject for one which is alleged to be uninteresting, a school might, therefore, be justified in continuing to offer the old subject under conditions so favorable that it would be interesting and vital to pupils! Unless one is willing to run counter to the dictates of psychology, certainly one must pause before placing a high academic value upon a subject which is so badly administered that from thirty-five to eighty-six per cent of the pupils wish to drop it.

It should, however, be recorded that each school subject is the first choice of many pupils. This statement is supported by Book's data in Table XII in which he shows that of the first choices of 5556 pupils, the number assigned to any one subject ranged from 44 for debating to 1156 for mathematics. Despite the fact that all subjects have their devotees, certain subjects are, as the data of Brown and Minnick show, in disfavor with many of the pupils who pursue them.[1]

Still other investigations have been undertaken to dis-

[1] See also Thorndike, E. L., *The Psychology of Algebra* (The Macmillan Company, 1923). pp. 386ff., for additional data on this point.

cover the interests of pupils in different portions or topics within certain subjects. Among these is that of Thorndike, who obtained the interest rankings of 1209 pupils for eight typical algebra problems.[1] His findings indicate that abstractness, difficulty of operations, elaborateness, "fractionness," and "letterness" are sources of annoyance and cause a decrease of interest, while the opposite characteristics are

TABLE XII

NUMBER OF PUPILS SELECTING DIFFERENT HIGH-SCHOOL SUBJECTS AS THEIR FAVORITE STUDIES *

FAVORITE SUBJECTS	CASES	PER CENT OF TOTAL GROUP	FAVORITE SUBJECTS	CASES	PER CENT OF TOTAL GROUP
Mathematics	1156	20	Latin	196	3
English and lit.	1119	19	Manual training	147	3
History	683	12	Chemistry	144	3
Commercial	561	10	Music and art	143	3
Science	368	6	Agriculture	87	2
Physics	323	6	Botany	53	.92
Dom. science	292	5	Debating	44	.77
Language	240	4	No sub. selected	192	3

* Book, W. F. *The Intelligence of High School Seniors.* The Macmillan Company, 1922, p. 160.

satisfying. Although he obtained judgments upon both applied and formal problems in computation, he found no evidence that pupils prefer applied problems of the sort which his lists contained.

Curtis conducted an inquiry into the scientific interests of general science pupils in order to plan effective extensive reading in that subject.[2] A request was made that pupils record on blanks provided for the purpose the five science

[1] *Ibid.*, Chapter XVI.

[2] Curtis, F. D. *Some Values Derived from Extensive Reading of General Science.* Teachers College, Columbia University, Contributions to Education, No. 163, 1924.

questions which they were most interested in having answered. The 3330 questions and statements received from pupils were classified and assembled, together with the data obtained by Pollock in a related investigation.[1] Tables

TABLE XIII

THE FORTY-ONE MOST COMMON SCIENTIFIC INTERESTS OF BOYS *

RANK	RANK POLLOCK	FREQUENCY, EXPERIMENTER		RANK	RANK POLLOCK	FREQUENCY, EXPERIMENTER	
1.	2.	83	stars	20.5		15	solar system
2.	1.	63	electricity	22.5		13	meteors
4.	15.	40	the earth	22.5		13	crude oil
4.	28.5	40	earthquakes	25.5		12	Aurora Borealis
4.	6.	40	planets	25.5		12	fire
6.	3.	39	radio	25.5		12	universe
7.	23.5	37	animals	25.5	11.	12	wind
8.	21.5	36	volcanoes	30.		11	color
9.	7.	35	moon	30.	18.	11	gases
10.	12.	34	gravity	30.	21.5	11	germs
11.	8.	33	sun	30.		11	snakes
12.5	9.5	28	Mars	30.	17.	11	sound
12.5		28	smoke	35.5	20.	10	clouds
14.	5.	24	lightning	35.5		10	eclipses
15.	27.	22	ocean	35.5		10	gasoline
16.	13.	19	air	35.5		10	magnetism
17.	16.	18	light	35.5	9.5	10	plants
18.		16	fish	35.5		10	thunder
18.5		16	mechanics	40.		9	geysers
20.5		15	astronomy (misc.)	40.		9	life
				40.		9	temperature

* Of the three numbers in columns preceding each interest the first is its rank, the second is the rank of the same interest in Pollock's study, and the third is its frequency in Curtis's study. (Adapted from Curtis, *op. cit.*, p. 33.)

XIII–XIV show the most important scientific interests for boys and girls as revealed by these investigations. The outstanding indication of these summary tables is that

[1] Pollock, C. A. "Children's Interests as a Basis of what to Teach in General Science." *Educational Research Bulletin*, Ohio State University, III. January 9, 1924.

pupils' interests cover an extensive domain and that suitable readings could be found for the cultivation of these interests.[1] The additional data supplied by Curtis in his monograph still further emphasize the wide variations among different

TABLE XIV

THE FORTY-TWO MOST COMMON SCIENTIFIC INTERESTS OF GIRLS *

RANK	RANK POLLOCK	FREQUENCY, EXPERIMENTER		RANK	RANK POLLOCK	FREQUENCY, EXPERIMENTER	
1.	2.	111	stars	24.		19	hair
2.	23.5	58	animals	24.		19	snakes
3.	7.	56	moon	24.	23.5	19	trees
4.	6.	54	planets	27.5		18	crude-oil
5.	15.	49	earth	27.5		18	geysers
6.	12.	47	gravity	27.5		18	meteors
7.	1.	43	electricity	27.5		18	thunder
8.	39.	42	flowers	31.5	13.	17	air
9.5	28.5	39	earthquakes	31.5		17	Aurora Borealis
9.5	21.5	39	volcanoes	31.5		17	fish
11.	8.	36	sun	31.5	16.	17	light
12.	9.5	32	plants	34.		16	astronomy
13.		29	smoke	36.		15	birds
14.	3.	28	radio	36.		15	solar system
15.	5.	27	lightning	36.	17.	15	sound
16.5		26	hibernation	38.5		14	history of science
16.5	9.5	26	Mars				
19.5	20.	21	clouds	38.5		14	sky
19.5	27.	21	ocean	41.		12	combustion
19.5	36.5	21	rain	41.		12	geology
19.5	11.	21	wind	41.		12	rocks
22.		20	tides				

* Of the three numbers in columns preceding each interest the first is its rank, the second is the rank of the same interest in Pollock's study, and the third is its frequency in Curtis's study. (Adapted from Curtis, *op. cit.*, page 33.)

pupils and thus indicate the need for a miscellany of materials and activities to meet the interests of all pupils in science.

As the importance of appealing to and cultivating interests is emphasized by teachers of literature, there have been

[1] See Curtis's monograph for lists of books which he found suitable.

numerous investigations of pupils' interests in literary selections. Over a generation ago Abbott obtained from 2469 pupils, 889 boys and 1580 girls, ratings of one hundred seventy-eight classics.[1] Classics such as Bunyan's *Pilgrim's Progress*, Burke's *Speech on Conciliation*, Hawthorne's *Tales*, and Milton's *L'Allegro* had been read, but were not liked by the pupils, while classics such as Cooper's *The Last of the Mohicans*, Lamb's *Tales*, Longfellow's *Evangeline* and *Courtship of Miles Standish*, and Scott's *Ivanhoe* and *The Lady of the Lake* had been read and were liked. Of the unliked books in general, Abbott observed this common characteristic, that, under a narrative, plausible or even vivid to the very credulous, they conceal deeper meanings which appeal only to the mature and literary reader; many of these books present sustained literary problems, such as moral allegory, the romanticizing of classics, and the social satire. High-school pupils are, however, young and lack subtlety and complexity of interest and insight. Consequently, Abbott adds, their "interest is always in contrast rather than style; in the direct story, rather than in one to any degree satiric or symbolic. They do not care for the attempt of one man to interpret the ideas of another, for literary criticism, or for experiments in rhetorical art." The favored classics show, therefore, "a prevailing love of adventure on the part of boys and of sentiment on the part of girls; but they also show that the two tastes are not irreconcilable." Furthermore, both boys and girls favor the novels of the day and enjoy the study of manners and daily life if it is clearly related to their own daily life. An extended review of Abbott's investigation has been given here because the classics which he investigated are still in general use. Two

[1] Abbott, Allan. "Reading Tastes of High School Pupils." *School Review*, X, 585–600. October, 1902.

main paths were open to the teachers who recognized the conditions revealed by him. One path led to the avoidance of unliked classics; the other to improved teaching of all classics. Fortunately, certain teachers, as shown later in Chapter XV, followed the second path; but, unfortunately, many other teachers, as shown in the following paragraphs, have wearily groped along the more obscure path which led to a continuance of futile practices in the teaching of the classics. Such an unintelligent treatment has not only caused pupils to dislike the classics which they have read in school, but also to read much literature that is not indicative of intellectual or literary growth. Despite the possibilities of inducing pupils to read widely in many fields, the writer has found that the voluntary reading of pupils is restricted to a few types of literature.[1] Table XV contains

TABLE XV

THE MOST POPULAR BOOKS IN WISCONSIN HIGH SCHOOLS IN 1922

The Call of the Wild	*Seventeen*
The Girl of the Limberlost	*Tarzan Series*
Freckles	*Her Father's Daughter*
Tom Sawyer	*The Shepherd of the Hills*
Riders of the Purple Sage	*Lone Star Ranger*
Main Street	*White Fang*
Little Women	*Desert Gold*
Anne of Green Gables	*The Sheik*
Pollyanna	*The Little Shepherd of Kingdom Come*
Huckleberry Finn	*Daddy Long-Legs*
	Penrod

the names of the books found most popular in Wisconsin high schools. Although one may possibly classify these books as entirely worthy, yet they are very different in

[1] Uhl, W. L. *The Materials of Reading.* Silver, Burdett and Company, 1924. Pp. 148ff.

character from the classics which pupils read in school. If the classics are read in part to train pupils for discriminative reading for enjoyment, then the voluntary reading of pupils should indicate something of success of the enterprise. If such books as those catalogued in Table XV are not the kind which pupils are trained to select for discriminative reading, it appears that the interests of pupils may not be very successfully guided at present by many teachers.

Jordan's investigations of children's interests in reading corroborate the findings of the writer and indicate that, in general, conditions have not been improved since the date of Abbott's inquiry.[1]

This extensive canvass of interests began with a survey of pupils' reading in 1917–1918 in Fayetteville and Stuttgart, Arkansas; Lawrence, Kansas; and Washington, D. C., and closed in 1925 with a similar survey of Charlotte and Greensboro, North Carolina. Over 5000 pupils participated. These pupils reported their first three choices of books and magazines. Although Zane Grey's works and the *American Magazine* overwhelm all rivals for popularity among both boys and girls, Jordan suggests that, to get a clear understanding of the sort of things that girls like during the high-school period, one should also read *The Girl of the Limberlost, Little Women, The Little Shepherd of Kingdom Come,* and *Freckles.* To discover the sort of things which interest boys, one should substitute the *Tom Swift Series, The Sea Hawk,* and the *Tarzan Series* for the distinctively girlish books, still retaining, of course, Zane Grey's works. As shown by their reading, the chief satisfiers of boys and girls during their early high-school years are, Jordan concludes, those catalogued in Table XVI. Still further evidence

[1] Jordan, A. M. *Children's Interests in Reading.* University of North Carolina Press, 1926.

of the lack of interest in many of the classics and of interest in lighter selections has already been cited in the summary of Crow's investigation of literature in the high school in Chapter IX.

TABLE XVI

CHIEF SATISFIERS OF BOYS AND GIRLS, TEN TO THIRTEEN YEARS OF AGE *

Satisfiers of Boys	*Satisfiers of Girls*
Physical strength and aptitude	Kindliness
Self-control, especially in crucial situations	To wear beautifully tailored clothes
Independence	To hold a high social position
Making a team at the expense of an unjust rival	Being honorable
Saving a person's life	Unselfishness
Mastery in physical combat when the opponent is despicable	Being useful at home
Loyalty	Playing pranks at school
Going somewhere	Gaining esteem of worth-while persons
New experiences	Being loved and admired for one's self
Praise of one's fellows	Protecting the weak
Good sportsmanship	Having things happen
	Frankness
	Getting a box from home, having a feast until late hours, and telling stories
	Success in dramatics
	Going to a city, if reared in the country

* Adapted from Jordan, *op. cit.*, pp. 98 and 102–103.

Investigations of pupils' interests in extracurricular activities. As extracurricular activities are upon a voluntary or at least a semi-voluntary basis in most schools, participation in such activities is evidence of interest in them. An understanding of the nature of extracurricular acts will, therefore, be serviceable in the planning of curricular activities motivated by interests, for there should be no striking demarcation between curricular and extracurricular activities.

Lehman canvassed the play activities of several thousand persons from eight and one-half to twenty-two years of

age.[1] These persons were asked at three different seasons of the year — November, February, and April — to check on a list of two hundred play activities obtained from children, activities at which they had been pleasurably employed during the week prior to the checking. Table XVII contains the names of activities which are especially significant for curriculum planning. The resemblances between girls' and boys' activities are perhaps more striking than the differences. In case of the activities which are relatively persistent, older persons' play is often more complicated than young children's. This increased complexity of the play of older pupils seems to be the most characteristic type of difference between the play of younger and of older persons. The "outstanding traits of each period have their beginnings in preceding stages and merge into succeeding ones."

Various ways in which the play activities catalogued by Lehman can be correlated with curricula have been assembled by Rohrbach,[2] who found that academic-social clubs in secondary schools can combine play interests with work activities. Rohrbach found, however, that extracurricular activities depend, for their success, largely upon their provision of opportunities for pupils' self realization. In language and literature clubs, for example, the activities are most successful only when sponsored by leaders who are trained in and enthusiastic about the subjects in question and who do not give the impression of using the students

[1] Lehman, Harvey C. "The Play Activities of Persons of Different Ages" and "Growth Stages in Play Behavior." *Pedagogical Seminary*, XXXIII, 250–292. June 1926. See also the same writer's article entitled, "Reading Books 'Just for Fun.'" *School Review*, XXXIV, 357–364, May 1926, and his chapter in Franklin Bobbitt's *Curriculum Investigations* (University of Chicago, 1926).

[2] Rohrbach, Q. A. W. *Non-athletic Student Activities in the Secondary School.* University of Pennsylvania, 1925. (Printed by the Westbrook Publishing Company.) Pp. 235.

TABLE XVII

PLAY ACTIVITIES ENGAGED IN BY MORE THAN TWENTY-FIVE PER CENT OF PUPILS OF JUNIOR-SENIOR HIGH-SCHOOL AGE

A. ACTIVITIES WHICH PERSIST THROUGHOUT THIS PERIOD

Girls' Activities	*Boys' Activities*
Riding in an automobile	Playing baseball
Making excursions to woods, parks, country, etc.	Playing catch
Going to the movies	Riding in an automobile
Going to parties or picnics	Watching athletic sports
Visiting or entertaining company	Going to the movies
Listening to the victrola	Playing card games
Playing the piano (for fun)	Listening to the victrola
Looking at the Sunday "funny-paper"	Listening to the radio
Reading jokes or funny sayings	Looking at the "funny-paper"
Reading the newspapers	Reading jokes or funny sayings
Reading short stories	Reading the newspapers
Reading books	Reading short stories
Writing letters	Reading books
Singing (for fun)	Writing letters
Looking at pictures	Whistling
Sewing, knitting, crocheting, etc. (for fun)	Playing football
Painting with water colors	Shooting a gun
Going to entertainments, concerts	Doing gymnasium work
Doing gymnasium work	Telling stories
Just imagining things	Singing (for fun)
Hiking or strolling	Driving an automobile
Playing basket-ball	Making or using a wireless or other electrical apparatus
Playing card games	Going to parties or picnics
Roller skating	Going to entertainments, concerts, etc.
Swinging	Listening to stories
Jumping or skipping rope	Social club activities
Dressing up in older persons' clothing	Playing indoor ball games
Playing school	Dancing
Playing hide and seek	
Running and romping	
Gathering flowers	
Cutting paper things with scissors	
Whistling	
Telling or guessing riddles	
Playing catch	
Telling stories	
Drawing with pencil, pen, or crayon	
Playing with pet dogs	
Listening to the radio	
Watching athletic sports	
Dancing	
Social club activities	
Driving an automobile	

to further their own interests. The pupils' criticisms, as collected by Rohrbach, indicated also that extreme care should be taken to grade club activities as to difficulty and that routine matters should be reduced to a minimum. At their best, such clubs were found to give pupils an opportunity to select, with guidance, their own activities and thus promote their interests in the related school subjects.

If it is true that the education of children should be built around and should grow out of the activities in which children engage spontaneously, Lehman's list of play activities are of great importance in planning curricula. A limitation which this investigator recognized in his data is that the play activities of any given week depend upon the child's environment as well as upon the child; the season of the year and the child's neighborhood and its recreational suggestions were found by him to alter play activities. It might, therefore, be granted that schools in the localities investigated can build upon the activities tabulated by Lehman; these lists do not, however, indicate that other activities could not have been popularized by the communities or the schools, or that still other activities are impossible in other localities. Rohrbach's monograph indicates many curricular possibilities in the utilization of spontaneous tendencies. Further elaboration of this point will be given in the next section.

The relation of interests to educational values. 1. *The selection of interests for cultivation.* The world of pupils' interests is a maze of open roads and *culs-de-sac.* Unguided and destitute of impelling or intriguing stimuli, pupils seldom espy the open roads. Rarely, indeed, do teachers, in their plans for guiding pupils, miss all the *culs-de-sac.* No small part of misguidance by teachers issues from a failure to select for cultivation those interests which are most

closely kindred to educational values and children's spontaneous activities.

The selection of interests for cultivation necessitates a consideration of them in relation to the educational values presented in Chapter IX. In that chapter educational values were defined in terms of activities which are either useful or lead to or produce something useful. These activities were also classified, following Bobbitt, into ten groups: language, health, citizenship, general social, spare time, general mental, religious, parental, nonvocational practical, and vocational. The search for the possible interrelationship between pupils' interests and the cultivation and useful performance of these ten types of activities can best be conducted by applying the principle stated above: the education of children should be built around and should grow out of the activities in which children engage spontaneously. The present quest then becomes one of correlating the spontaneous activities of children with the useful activities or objectives of education.

Table XVIII is the result of an attempt to appraise the spontaneous activities which Lehman catalogued. This table indicates that "Making excursions, etc." is of significant value for spare time, general mental, and nonvocational practical activities; of incidental value for language, health, citizenship, and general social values; and of little obvious value for religious or parental activities, and so on. These spontaneous values can be classified also with regard to the subjects to which they are most closely related. When so classified, six activities seem to have significant value for English, while all those marked *Inc.* in Table XVIII may, by suitable teaching procedure, become significant; others, as "Making excursions," are significant for science, and still others are obviously significant for civics, history, music,

TABLE XVIII

THE RELATION BETWEEN PUPILS' SPONTANEOUS ACTIVITIES AND THE MAJOR ACTIVITIES WHICH UNDERLIE EDUCATIONAL VALUES. (AN *x* INDICATES THAT THE ACTIVITY HAS SIGNIFICANT VALUE; *Inc.*, THAT THE VALUE IS INCIDENTAL; AND A QUESTION MARK, THAT THE VALUE IS QUESTIONABLE.)

SPONTANEOUS ACTIVITIES	TYPES OF MAJOR ACTIVITIES									
	Language	Health	Citizenship	General Social	Spare Time	General Mental	Religious	Parental	Nonvocational practical	Vocational
Making excursions, gathering flowers, etc	*Inc.*	*Inc.*	*Inc.*	*Inc.*	x	x	?	?	x	*Inc.*
Hiking	*Inc.*	x	*Inc.*	x	x	*Inc.*	?	?	?	?
Engaging in or watching outdoor games or sports	*Inc.*	x	*Inc.*	x	x	*Inc.*	*Inc.*	*Inc.*	?	?
Doing gymnastic work	?	x	?	x	x	?	*Inc.*	*Inc.*	?	?
Driving an automobile	?	*Inc.*	?	x	x	?	?	?	?	?
Going to parties, visiting, entertaining, etc.	*Inc.*	?	*Inc.*	x	x	x	*Inc.*	*Inc.*	?	*Inc.*
Playing musical instruments or singing	*Inc.*	?	x	x	x	x	x	x	?	?
Listening to victrola or radio	*Inc.*	?	*Inc.*	x	x	*Inc.*	*Inc.*	?	?	?
Attending entertainments	*Inc.*	?	*Inc.*	x	x	*Inc.*	*Inc.*	*Inc.*	?	?
Dancing	?	*Inc.*	?	x	x	?	?	?	?	?
Performing club activities										
Looking at comic sheets	?	?	?	?	*Inc.*	?	?	?	?	?
Looking at pictures	*Inc.*	?	*Inc.*	*Inc.*	x	x	*Inc.*	*Inc.*	*Inc.*	*Inc.*
Reading humorous skits, newspapers, short stories, and books	x	*Inc.*	x	x	x	x	x	x	x	x
Writing letters	x	?	*Inc.*	x	x	x	*Inc.*	*Inc.*	*Inc.*	x
Practical activities as sewing, etc., or making and using wireless apparatus	*Inc.*	*Inc.*	*Inc.*	*Inc.*	x	x	*Inc.*	x	x	x
Painting and drawing	*Inc.*	?	*Inc.*	*Inc.*	x	x	*Inc.*	*Inc.*	*Inc.*	*Inc.*
Imagining things	x	?	?	?	x	x	?	?	*Inc.*	*Inc.*
Playing card games	?	?	?	x	x	*Inc.*	?	?	?	?
Dressing up in older persons' clothes	x	?	?	x	x	?	?	?	?	?
Playing school	x	*Inc.*	*Inc.*	*Inc.*	?	x	?	?	?	?
Telling and listening to stories, riddles, etc.	x	?	?	x	x	x	x	x	*Inc.*	*Inc.*
Playing with pets	*Inc.*	?	?	?	?	?	?	?	?	?

fine and practical arts, physical education, and so forth. Another form of classifying these activities is in terms of types of educative experiences in which they may be significant; for example, many of them are significant in providing points of departure for socialized procedures, dramatization, and problem-solving. Interests in certain outdoor activities, practical occupations, social diversions, reading, experiences with music and art dramatization and problem-solving are, therefore, among the available forces to be utilized in curriculum planning.

In addition to the interests exemplified in spontaneous play activities, there are those which grow out of or accompany secondary types of interests and various activities of work and play. Among these are life-career interests which Franklin, Proctor, and others have found to be relatively permanent when pupils are consulted about their curricula. Closely connected with life-career interests as agents of motivation are those which Book found as accompaniments of efficient learning; namely, an interest in the usefulness of an activity which is attempted, and a consequent interest in performing the activity effectively. Finally, as already indicated by investigations of science and literature, there is a range of interests as broad as each subject of the program of studies. Adequate curriculum planning must recognize these educationally sound and valuable interests and also provide facilities for teaching which will ensure their utilization. Only by such planning can the lasting benefits of pupil self-realization be attained.

2. *Harnessing interests for work.* The real problem of utilizing interests consists of harnessing spontaneous interests for productive activity and also of building up advanced hierarchies of interests. For, as mentioned in the preceding paragraph, there is, in the persistent human worker an

advanced group of reaction devices which lead the trained person to respond upon a secondary basis of socialized interests rather than merely upon a primal or naïve emotional basis. As Judd says:

> The effort of individuals to adapt themselves to institutional demands results in what may be properly described as a wholly new group of pleasures and displeasures. For example, if we think of the pleasures which come from reading literature, it is evident that we are dealing with an emotion which could not exist before language was evolved. Indeed, the individual must go through a long series of educational experiences before he can participate in any degree in the higher pleasures of reading. During the process of education, the developing individual cultivates certain expectations, and ultimately nothing will satisfy him which does not meet these expectations. Even so elementary a demand as that which calls for correct grammatical structure must be met; but above and beyond this, what is read must have verisimilitude and unity and clearness. If the literary selection conforms to all the elementary demands and at the same time appeals to certain personal desires which are in keeping with the ambitions of the individual, there results an emotion which can be described in general terms as pleasurable but is in a class wholly distinct from the pleasures derived from the tastes and odors which give satisfaction to the instinctive yearnings for food.[1]

To raise a pupil to this secondary plane of mental life, the curriculum must be organized so that it cultivates and satisfies the pupil's interests at each stage of development. Appreciation of subtle literature, for example, grows out of experiences with simpler literature which is suited to the interests of immature readers. But an attempt to have pupils read too difficult literature violates one of the laws of readiness, makes the utilization of the pupils' naïve spontaneous interests and activities almost impossible, and at

[1] Judd, C. H. *The Psychology of Social Institutions.* The Macmillan Company, 1926. Pp. 276–277.

the same time drives the pupil, unguided, to find satisfaction in simpler and often unworthy readings. For the present generation of pupils, Jordan has shown that much is left to be accomplished in the development of voluntary reading of fine literature. The remedy for the situation is to be found in the provision of wholesome materials upon the pupils' plane of development; that is, in the integration of the inner urge and the outer means. Since literature abounds with wholesome selections which exemplify the qualities listed in Table XVI, greater quantities of such materials should be provided for the purpose of discouraging undesirable reading and stimulating desirable reading. Such a procedure would harness desirable interests for the formation of valuable habits and permanent interests. Analogous conditions exist in other subjects.

In the utilization of interests to attain educational values, one should recognize the importance of interests as both means and ends. An abiding interest in a worthy social activity is, for example, a significant result of superior training. Spontaneous interests provide a key to difficult learning situations and promote the regular daily work of mastery. Out of knowledge and mastery and the utilization of interests in varied social situations comes a secondary series of interests which accompany more spontaneous interests in still further mastery. The vast range of interests allied to any well-administered subject emphasize the need for expert selection and organization of the materials of each subject. In addition to these all but universal interests, pupils require counsel in pursuing curricula which are adapted to their individual interests and vocational choices.

What interests are available in specific learning situations and in certain subjects and the significance of pupils' vocational interests have been shown in this chapter. Some of

the means for harnessing interests have also been described. The present chapter has an especially close relation to Chapters XI and XIII on pupil equipment and needs and to Chapter XV in which concrete examples of successful teaching through the utilization of interests are presented.

(For bibliographical notes, see end of Chapter XIII.)

CHAPTER XIII

PUPIL NEEDS AND CURRICULA

Types of pupil needs. The needs of secondary school pupils are of two principal varieties: first, they need training for their own self-realization relatively apart from society, and, second, they need training for intelligent participation in the social world of which they form a part. Of each of these two needs there are two phases: during the secondary-school period and after that period. That is, pupils need training for individual and social life during and after schooldays. To meet educational objectives, this training must comprise the ten major types of activities: language, health, citizenship, general social, spare-time, general mental, religious, parental, nonvocational practical, and vocational. This chapter will draw together the conclusions of the previous chapters in regard to the needs for immediate pupil self-realization and present further data on the needs of the pupils' prospective lives. As Part III on objectives dealt at length with vocational needs, this aspect of the present chapter will be only briefly treated here.

The needs of pupils during school. The social and individual needs of pupils, as felt by the pupils themselves, arise out of their own activities. Those activities may be in part spontaneous and in part induced by somewhat unnatural surroundings. As long as the academic environment is planned chiefly with reference to the voluntary activities of pupils, this environment will, of course, induce responses which are, for purposes of training, superior to the

unguided activities of children. Such an environment exemplifies the recognition and utilization of pupils' equipment and interests. If, however, the environment be only remotely related to the more spontaneous interests of children, it will assume the characteristics of an unfavorable learning situation.

An instructive account of the way to provide a favorable environment is quaintly set forth by Comenius in *The Great Didactic*.[1] According to Comenius, pupils display a keen desire to fulfill their natural functions throughout their whole period of development. Following this law of readiness, there should be provided the most suitable environment for natural activities, including, of course, the activities which are most appropriate for use in attaining the objectives of education. In contrast with this law, Comenius found teachers who drove pupils to their studies, quite overlooking the ancient proverb which says that learning depends upon the will to learn and that the will to learn cannot be forced.[2] As a tree is potentially contained in the kernel of its fruit, so the man is potentially found in the child, sufficiently at least to point the way to teachers who have eyes to see. But, exclaims Comenius, may God take pity on an age so blind to pupils' needs that its teachers are allowed to overlook every law of exercise and learning in planning courses, materials, and methods. To rectify this disastrous condition, Comenius advised that no pupil activities be set up which are not propelled by their own strength, which are not understood by pupils, or which are regarded by pupils as useless to those who pursue them. Many writers have emphasized, as did Comenius, the value of interests as means for facilitating learning, but few have insisted as he did upon the importance of pupil self-realiza-

[1] Chapter XVII. [2] Quintilian.

tion during the school period. Academic experiences with courses which involve appreciation may, however, be enjoyable, or the activities performed in courses which involve problem solving, memorizing, or the attainment of skill may be intelligible and propelled by a belief on the pupil's part that the activities are useful. When these conditions exist, pupil self-realization during the school period is fostered. Incidentally, the emotional attitudes which are thus set up are propitious for repetition of the experiences, and the activities are, as Book has shown, favorable for learning. Other implications of the modern doctrine of interests and their relation to needs have already been discussed in the preceding chapter.

In addition to pupil needs which develop from problems of self-realization through interests, there are others which grow out of the maladjustments of certain pupils. Unrequited needs for adjustment have led thousands of able pupils to withdraw from secondary schools; thousands of others have submitted to the schools and contracted undesirable attitudes from which they never recovered.[1] Reavis has compiled extended case records of pupils whose maladjustments were due to one or more of the nine following remediable causes:

Social maladjustment	Deficient elementary training
Physical and health disability	Speech disability
Endocrine deficiency	Personality maladjustment
Unfavorable mental predilection	Ineffective habits of study
	Psycho-physical defects

Such cases are in part problems for the school diagnostician and in part for the counselor in curriculum matters. Many

[1] Data which support these statements are discussed in detail by W. C. Reavis in *Pupil Adjustment in Junior and Senior High Schools.* D. C. Heath and Company, 1926. Also see L. T. Hopkins, *The Intelligence of Continuation School Children in Massachusetts.* Harvard University Press, 1924.

of the cases which Reavis cites would, in most schools, be treated as merely curriculum misfits. For example, a boy who, upon entering high school, was allowed to enroll for only three courses because of an incomplete previous school record, did only fairly satisfactory work in mathematics, barely passed in English, and failed in mechanical drawing. During the second semester he failed in English and made little improvement in his other courses. That is, he made the kind of record that generally leads to withdrawal from school and the observation by teachers that the pupil could not learn. This pupil's needs were, however, hidden up to this time. It was later discovered that this pupil was far above the average in general intelligence, but that he had such extreme social disabilities as to lead to repeated failures. As soon as his will power was directed and held to the selection of a definite mode of reaction, the pupil did his work satisfactorily.[1] Another important case is that of a boy whom Reavis describes in a later chapter of his work. This boy's predilection for certain courses and aversion to others nearly terminated his schooling — he would master only a part of his curriculum. He was finally led to see that he must adapt himself to certain academic regulations and that those regulations in regard to curricula were not wholly without reason. His consequent will to learn appears, however, to have been entirely inadequate since his home environment of too much coddling made persistence impossible for him. Curriculum adjustments and improved environment finally enabled this boy to complete a college preparatory course.

These cases and those which arise from other causes of maladjustment constitute curriculum problems because success is dependent upon analyses of pupils' difficulties and

[1] Reavis, *op. cit.*, Chapter VII.

skillful administering of curricula. Without careful analyses one might fairly assume that such pupils were unable to pursue an existing curriculum successfully: careful analyses often show, on the contrary, that the matter is not fundamentally a curriculum maladjustment at all. Such analyses thus reduce curriculum difficulties and often enable maladjusted pupils to correct their defects and succeed better than normal children do in schools where pupils' problems are less intelligently faced. That is, the effectiveness of a curriculum in meeting a difficult pupil's needs depends largely upon the school's ability to readjust such a pupil.

Save for the data quoted from Lehman in the preceding chapter, pupils' interests and needs in physical education have received no notice in the three chapters of this section. Lehman's data give ample basis for statements which physical educationists have made to the effect that educative activities can and should be based upon spontaneous play — twenty-five or more per cent of the high-school pupils of each age which he investigated named gymnastic activities and other physical activities such as baseball and basket-ball among the pursuits which they enjoyed. If, then, as Hetherington asserts, children need for their immediate development "big-muscle activities," [1] interests of pupils have only to be combined with their needs to make a healthful, joyous course. In this way motivation will be provided for the effective training required to meet needs as described in the following paragraph:

> The activities selected to be taught within school hours must tend to carry over by their own dynamic drive into the out-of-school play periods. During childhood and growth the only activities which will be carried on with intensity for any length of

[1] Hetherington, C. W. *The School Program in Physical Education.* World Book Company, 1922. P. 57.

time are the play activities. These activities tend to be continued because of the pleasure they give. Formalized and artificial activities are fatiguing and particularly uninteresting after the novelty has worn off, and they cease to go on as soon as adult compulsion is discontinued. Drills never impel children to spontaneous action. Children do not rush together spontaneously at recess or after school and start a gymnastic drill. But this is precisely what must happen from activities in school hours if physical education is to help produce citizens. This fact alone puts emphasis on the selection of activities on the natural activities.[1]

Likewise, the informational aspects of physical education should be provided for so that the health habits already acquired will be reënforced by accurate, scientific knowledge. This training should not be merely theoretical, but should instead be organized around such topics as breathing, clothing, posture, foods, exercise, care of the feet, and immunity, natural and acquired. Late in the junior high school period the interrelations of civics and physical education need emphasis, so that the public-health machinery of the community will be understood. The following paragraph sets forth the types of such information needed both during and after the secondary school period:

The study of civics should be elaborated and systematized, and courses in physiology, sociology, physical training, and home economics should be given, in which many facts regarding personal and public health may be emphasized. Courses in biology should be arranged so the children may study thoroughly the life processes of insects, plants (including bacteria), protozoa, sponges, worms, mollusks, fishes, amphibia, reptiles, birds, mammals, and human beings. One excellent course outlined very carefully for high-school use includes under human biology the study of foods, digestion and absorption, respiration, excretion, and other bodily processes, the skeleton, nervous system, muscles, and the various organs, including the respiratory, digestive, and reproductive.

[1] *Ibid.*, pp. 57–58.

Human evolution is studied, showing the influence of heredity and environment.[1]

A form of training to meet immediate pupil needs and one which in certain schools gives point and vitality to much of the training in English and citizenship is usually classified among the extracurricular activities of schools. Such training, participation in nearly if not quite self-directed pupil activities, is, nevertheless, a curriculum matter. Insofar as the subjects of any curriculum are amenable to the organization and performance of group activities, so far is the effective administering of the subjects dependent upon such organization and administration. Personal education can no longer be effectively described as a product solely of isolated individual effort. Not only is knowledge itself of social origin, but also the means of acquiring knowledge are social in character. An essential consideration in planning curricular activities is that socializing activities have as their major function not the solution of disciplinary problems or the entertainment of pupils, but that, like interests, such activities are both means and ends in the immediate and future life of pupils. As Miller and Hargreaves assert, the coöperative ideal must be substituted for the practice of isolation:

> Ever and always the classroom has set up and insisted upon the ideal of isolated and individual work. The seating arrangement of our classroom is on the penal plan, so that a pupil may neither be rewarded in his work by the smile and friendly glint of approval in the eye of a classmate when his task has been well done, nor be encouraged to renewed effort by the sympathetic glance when he has failed or only partially succeeded in his attack upon the task assigned. Contrast this with the situation in the semi-curricular and extracurricular activities, where co-operation is the

[1] The National Child Health Council. *Report on Health for School Children.* United States Bureau of Education. 1923. P. 21.

note to which all endeavor is tuned. Here achievement receives unstinted praise. The whole organization acclaims and encourages to further successes him who performs worthily and well. The youth who plays or sings out of tune, forgets his lines, drops the ball and is in despair over his failure in the crisis learns from his fellow participants, as they gather about him with words of encouragement, what human sympathy and that finer spirit of co-operation in a common purpose really are.[1]

The needs of pupils for their prospective lives. All peoples have recognized since the earliest days of recorded history the need to train adolescents for their prospective adult lives. The amount and character of the training proposed have varied with the pupil's social and intellectual rating and with the cultural status of the people. As a result of this differentiation of opportunity, most adolescents have been forced to rely upon incidental rather than systematic training.

Modern times have changed these conditions. The value of systematic training for adolescents of all classes is now recognized in all nations of high cultural status. Vocations have become complex, and the cost of training workers within many vocations has increased. For all vocational workers there is need, as shown in Chapter IX, for training for many general duties as workers and citizens; for many, there is need also for training for specific duties. Pupil needs in terms of the aims of education as set forth nearly three centuries ago by a pioneer are now generally acceptable with little or no dissent:

> The true and proper end of Schooling is to teach and Exercise Children and Youths in the Grounds of all Learning and Virtues, so far as either their capacitie in that age will suffer them to con, or is requisite to apprehend the principles of useful matters, by which

[1] Miller, H. L. and Hargreaves, R. T. *The Self-Directed School.* Charles Scribner's Sons, 1925. Pp. 320–321.

they may bee able to exercise themselves in everie good employment afterwards by themselves. . . . Now according to those aimes and ends, I suppose it may be inferred that none should bee dismissed out of the Schools, till they are able to make use of all sorts of Books, and direct themselves profitably in everie cours of Studie or Action, whereunto their *Genius* shall lead them.[1]

The provisions for training pupils for later life have so far advanced that their number and intricacy make an exploratory period desirable. This exploration now has values which are recognized for the pupils who are planning to enter college as well as for those who will enter vocations immediately after they leave the secondary school. The relation of such provisions to educational objectives has already been discussed in Chapter X, where the "broadening and finding" plan of the Okmulgee school system is described. Such activities enable eighth-grade pupils to explore many courses, and the "broadening" feature in traditional courses is valued as highly by Bruner as the finding of vocational interests.[2] This exploratory work is organized into short unit courses, nine weeks in length. The following account of the nine weeks' broadening and finding course in electricity was prepared by Mr. Douthit, instructor in manual arts:

Aims. 1. In this course, as in all broadening and finding courses, one of the primary aims has been to give the pupil sufficient knowledge of the subject and to show him the true value of the different vocations directly connected with the subject, in order to help him in determining whether or not he wants to take further work in this field. In cases where the pupil does not want to engage in this line of work, but elects some other technical line, the knowledge

[1] Dury, John. "Supplement to the Reformed School subordinate to Colleges in Universities." First published in 1650. Here quoted from J. W. Adamson, *Pioneers of Modern Education.* Cambridge University Press, 1905. Pp. 152–153.

[2] Bruner, *op. cit.*, p. 20.

gained from this course should help him to know the relation between this work and that which he is following, and also to know how much knowledge along this line he will need to carry on his chosen work successfully.

2. If the pupil decides to take more electrical work the knowledge gained from this course will give him a decided advantage over the boy who has not taken it. If the pupil never takes any more work in this field, he has gained some knowledge of a broadening nature which he will always appreciate.

3. The various professions and vocations in connection with electrical work are taken up and discussed. This seems to be of great help to the boys in aiding them to get a clear idea of just what work is included in the various vocations, and it often happens that a boy who says he would like to do a certain thing, later says that he was mistaken and that some other line of electrical work appeals to him more.

Summary of Course. In presenting this course it is advisable, in addition to the general knowledge given the pupil, to show him both sides of the question. In showing him the bright side of the question, the following points are considered:

1. A brief history of the development of the electrical industry and the important place that it holds in our lives at the present time.

2. The opportunities and the necessity for still further development in this field.

3. An idea of the future demand for men and an idea of the salaries and opportunities offered in the various fields.

4. Discussion of some of the outstanding electrical developments in our present day commercial life.

5. A brief view of the lives of some of our outstanding men in the electrical field.

6. Take the boys to visit the local electrical plants. Try to answer all their questions and in addition give them an idea of the different fields of work necessary for the operation of these plants, including office work, skilled labor, engineers and designers, distribution, public safety, and the like.

In order not to give a distorted view, the pupils are shown some of the less pleasant aspects of the work, e.g.:

1. All pupils are required to learn the elementary laws governing

electricity and magnetism. This not only gives them useful knowledge, but also shows them that there is some real work to be done in pursuing the study of electricity.

2. Experiments and projects are worked out in the laboratory which, although interesting, require some thought and real work on the part of the pupil.

3. In discussing the work in this field, the pupils are reminded that very few persons are Edisons. Competition that exists is brought forcibly home by reminding the pupils of the number of electrical engineering students graduated each year by the leading colleges, compared to graduates in other technical fields.

In order that this course may be as valuable to the pupil who does not pursue this work further, as to the one who goes into electrical work, the subject matter should consist of the things concerning electricity and magnetism which the ordinary layman needs to know in order to read articles and converse on subjects intelligently. This includes:

1. Sources of energy.
2. Converting energy of one form into energy of another form.
3. Early history and important steps in the development of magnetism.
4. Main points in the development of the electrical industry from the early experiments down to the present day, mentioning the men who have made important contributions to this development.
5. Relation between electricity and magnetism.[1]

Analogous work is reported for the English-Latin nine weeks' course. Miss Maddox outlines the plan and content of this work as follows:

Aims: The teacher's first aim in this English-Latin broadening and finding course is to enrich the pupils' experiences with an appreciation of art, literature, etc., through a wider knowledge of the mythological stories of Latin and Greek literature.

The second aim is to give to the pupil a cross-section of Latin study from the most pleasant to the most difficult part, so that he, the teacher, and the parents may be better able to decide whether

[1] *Ibid.*, pp. 42–43.

he should continue the study of Latin or enter upon some other field of activity.

The third aim is to show the pupil the practical values of a study of Latin on our English vocabulary and to provide an easier and better understanding of many passages in English literature.[1]

The twelve chapters into which the English-Latin course is divided are:

1. The Fall of Troy and the Wanderings of Æneas.
2. Early English.
3. Early History of Latins and the Spread of their Language.
4. Contact of Latin with English.
5. Modern Latin.
6. Word Studies.
7. Latin Words and Expressions in Everyday Life.
8. Elements of Language.
9. How Latin Helps Us in Spelling.
10. Latin Prefixes in English.
11. Syntax and Inflection.
12. Is Latin Worth While?

Miss Maddox concludes her account by saying that:

After four years' experience in teaching this course, it was very difficult to pick out the part most interesting to the pupil. For days they gladly listen to the stories of the fall of Troy, the escape of Æneas, his experiences with the Harpies, his love for Dido, the track-meet at Drapanum, and his visit to the underworld. They became absorbed in the adventures of Romulus and Remus and the history of Rome. In this connection the *Standard Bearer* by Whitehead was found to be an excellent story to read. Other interesting stories and pictures of Roman life have been taken from White's *The Unwilling Vestal.*

As the course develops, the pupils find real Latin words for the first time. To be able to "spring" *lapsus linguæ* on mother and father at the dinner-table places them in a class by themselves. They immediately begin searching the newspapers, magazines,

[1] *Ibid.*, p. 34.

story-books, cartoons, pictures, etc., for words and phrases that might be Latin. Much material is brought in, in this manner, and it is very surprising how few errors are made. The histories and stories of such words as *arena*, *campus*, *circus* and *candidate*, as well as many others, prove very interesting. It is no trick at all to have them see how many words, and words of what length, they can build up by use of Latin prefixes and suffixes. No Latin teacher well grounded in the history and language of the Latins will experience difficulty in discovering interesting work for pupils in an English-Latin broadening and finding course.

But in order that the pupil may see all of the picture, a few, difficult lessons were presented. Most pupils of high school Latin find their greatest difficulty in translating English into Latin, hence a part of the course presents that phase of the work. The five cases with their uses and singular second declension endings are also presented. Changes in verb forms according to person and number are explained, and the present tense of *sum* is given. About three days are spent in translation work. The pupils and teacher together review the simple principles of translation and apply them in translating sentences such as follow:

1. The servant has a garden.
2. Marcus has a horse.
3. In the servants' garden is a wall.
4. The friends of the servants are in town.
5. Marcus and Manlius have a friend (friends) in town.
6. The men give many books to (their) friends.
7. I see a friend of Marcus.
8. We see the friends of Marcus.

This is done chiefly for the satisfaction the pupils have in using words so new and different.

Most of the work in this course must of necessity be supplied by the teachers, since there is very little printed material that may be placed in the pupil's hands. Five or six class assignments are made, however, during the nine weeks. These consist of various phases of Roman life, such as their houses, equipment, dress, professions, recreations, mythical stories, etc. The material, which is collected by this means, is sometimes arranged in individual notebooks or on the bulletin boards. Other devices, depending largely on the personnel of the class, such as adver-

tisements, jokes, Latin songs, Roman games, cartoons, etc., are quite frequently employed.

The course has been of decided value to the teachers of the Latin department in enabling them to advise the pupils more intelligently in regard to future work in Latin. The Latin department has been strengthened, and the work made to produce more personal satisfaction on the part of the teachers, since they were guiding into Cæsar, Cicero, and Virgil only those pupils for whom success seemed more or less assured. The value to the pupils, as can be illustrated by case after case, is unquestioned.

Nine weeks seems to be a sufficient length of time to give both the teacher and the pupil a fairly good notion of the way in which the wind is blowing, as far as Latin is concerned.[1]

When exploratory work is conducted in a systematic manner so that pupils have counsel during their exploration, it enables them to select their longer courses more wisely than they ordinarily would and also prevents their merely dabbling into the first few weeks of courses. When they finally select longer courses they may, after such training, be expected to pursue them with at least fair intelligence and to continue them long enough to attain the values of the course. Or, in terms of a favorable learning situation as described in Chapter XII, pupils who have been counseled in this manner should be able to select their courses with intelligence, they should exhibit interest in their own progress, and they should be reasonably certain of making progress after their preliminary trials.

Preparation for prospective schooling is an important need of approximately one-half the graduates of secondary schools. For many schools, the proportion of graduates who continue their academic training is much higher than this. So important is the need for adequate ability on the part of college freshmen and so vigorous are the demands of certain

[1] *Ibid.*, pp. 38–40.

colleges that secondary schools have at times practically acknowledged as the schools' chief function the preparation of pupils for college. In former days, though to a less degree in recent years, this engrossing function has blinded principals and headmasters to the needs of adolescents as such.

What are the curricular needs of the college freshman and how can those needs be met without interfering with desirable elements of adolescent life? Although the needs of college freshmen have fluctuated during the last generation, they can still be stated as formerly in terms of personality traits, physical development, and intellectual competency.[1] The personality traits imply in part native characteristics and in part acquired and intellectual attitudes. They can be summarized under five points: social point of view, perspective, initiative, intellectual power, and self-mastery. Social point of view can be described as an attitude of social responsibility, coöperativeness, friendliness, public-spiritedness, and the ability to detect and assimilate refined manners. Perspective indicates tolerance of other persons' views, a hopeful open-mindedness toward progressive ideas, and reverence for accepted truths. Initiative as a trait includes items drawn from many powers and acquisitions, and its possessor is resourceful and constructive. Intellectual power is also a composite trait which includes the ability to do constructive thinking, the possession of information, social experience, and sufficient æsthetic appreciation to enable one to meet social demands. Self-mastery includes resourcefulness in leisure.[2] The appreciation of general requirements in such personality traits is exemplified by

[1] See McKown, H. C. *The Trend of College Entrance Requirements*, 1913–1922. United States Bureau of Education, *Bulletin* 1924, No. 35. Chapter II.

[2] See F. J. Kelly, *The American Arts College*. The Macmillan Company, 1925. Chapter II contains an account of the aims of the college and incidentally names the traits expected in college students.

the practice of Oberlin College to which the prospective candidate must be endorsed by a prominent citizen, and by that of Dartmouth to which the applicant must have a confidential rating in the following qualities sent directly to the college by an alumnus: individuality, faithfulness, straightforwardness, fair play, school spirit, interest in fellows, and leadership.

As college life comprises physical as well as mental activities, students should be prepared to enter into physical activities as a part of such life. Since physical welfare conditions mental welfare, students should be able to meet certain physical tests. There are, consequently, two principal physical needs; one of these needs emphasizes the ability to lead a well-rounded life of which physical activities form a part; the other need emphasizes desirable physical status as a counterpart of healthy mental life. Physical development as a need of graduates of secondary schools appears, therefore, to be an essential part of a student's life.

Of the three types of needs of college students — personality traits, physical development, and intellectual competency — the last has, as shown in the historical section of this treatise, always received the greatest emphasis. Although American colleges have always asked for character certificates of students, the measurement of students' ability to enter college has seldom been clearly indicated except in terms of intellectual competency. At present there are two principal measures of such competency. One of these measures is designed to determine whether or not the student has mastered a given amount of academic subject matter; the other is designed to find out whether or not the student has sufficient native capacity to profit by college life.

Competency in academic subject matter is sometimes discovered by means of a series of tests applied within a

short period of time and sometimes by tests applied at intervals throughout the sceondary school course; in some cases, only the latter, distributed tests, are employed. Between the situation described elsewhere when candidates for admission to Harvard were examined for subject matter in the classics only and the present comprehensive examination plan of the College Entrance Examination Board, detailed formal examinations in all admission units have been applied. The *Report* of the Board indicates that the comprehensive examination as a substitute for examinations in the entire entrance offering will be continued. The results of that type of examination indicate, therefore, the applicant's principal academic needs for the colleges which coöperate with that Board, and, for the one-twentieth of secondary schools of the United States which send up an average of two or more students a year for the Board examinations, the organization of curricula with reference to the questions set by the Board may be desirable, even though one may disagree with the point of view of the examiners.[1] For the much larger number of schools which certificate their graduates as competent to do college work, curricula should be organized with reference to the freshman college courses. Cumulative entrance examination data by five-year periods for twenty-five years indicate that college preparatory institutions meet the needs of pupils better now than they did a generation ago; improvement is indicated also during the five-year period, 1920–1925.[2] Maxwell's study of the success of high-school graduates of June, 1924, in their first semester of college work in 1924–1925 indicates that the quality of preparatory schools, or else

[1] The questions set by the College Entrance Examination Board are published annually by Ginn and Company. For statistics of the Board, see *Twenty-fifth Annual Report of the Secretary*, 1925. For a comprehensive discussion of this matter see the *Bulletin of the American Association of University Professors*, XII, October, 1926.

[2] *Ibid.*, pp. 2–3 and 50.

of colleges, varies considerably: less than one per cent of the students who enter certain institutions fail, while over twenty per cent of those who enter other schools fail.[1] These data indicate that the high-school graduate's academic needs as far as preparation for certain colleges is concerned are fully met; they indicate also that thoroughly trained secondary-school teachers can prepare pupils adequately for the most rigorous colleges, and that secondary schools which have devoted themselves most completely to preparation for college entrance examinations are, as one might expect, the most successful in this matter.[2]

Requisite curricula. Curricula consist of classified activities for pupils. Pupils need these activities as practice lessons in self-development. Their specific needs are in part individual or personal and in part social, but personal and social needs are so closely interwoven that few of them can be sharply restricted to either of these two categories.

Pupils' needs are composite in still other respects. Both the equipment and the interests of pupils limit and guide their needs — an able pupil of strong literary bent needs different training than that provided for able pupils of strong scientific or mechanical bent. Needs cannot be determined until interests and equipment have been canvassed by trial or exploration and counsel. Contrariwise, needs as viewed by pupils often alter their interests. For example, if a pupil finds an activity useful in training himself for a desired skill, he sets himself at the activity so vigorously that his apparent equipment seems greatly

[1] Maxwell, C. R. "The Success of High School Graduates Who Go to College." *North Central Association Quarterly*, I, 190–220. September, 1926.

[2] *Ibid.*, p. 5. The success of candidates in College Entrance Board examinations for twenty-five years favor private schools in the ratio of more than seven to one. In the languages and in history, the ratio is more than six to one, while in mathematics and natural science the ratio is thirteen to one. Geographical comparisons favor New England, the Middle States, and the South and West on a three, two, one basis, respectively.

superior to that which he was formerly believed to possess. In turn, his needs then become greater. This reflex relationship between equipment, interest, and need has been shown in the preceding discussions to be of great importance in the psychology of learning, and, therefore, in the organization of learning activities such as secondary-school curricula.

The composite character of needs necessitates a consideration of vocations, later school work, and general non-vocational activities and the attitudes and interests connected therewith. The ideal curriculum for a given pupil may be described as a systematized series of activities which will lead to the mastery of the best thought and practice required by his present and future pursuits. This curriculum will cultivate desirable interests and attitudes and will lead also to an open-mindedness toward progress — to a continuous exploratory attitude. More briefly, one may say that an adequate curriculum comprises a composite of responses to an integrated array of pupil needs.

This strictly utilitarian point of view has, of course, always been accepted by all educators. Acceptance of this view has not, however, been consistently beneficial in actual practice. It is perfectly clear to the student of the history of education that the persons who have formulated curricula have been afflicted with all manner of blindnesses and have, consequently, viewed certain curricular needs dimly and others, by contrast, in too partisan a manner. Examples of this purblindness and narrowness of distinct vision can be found among certain myopic sophists of ancient Greece, mediæval grammarians and commercial teachers, eighteenth-century pedants, and contemporary uncritical worshipers of pedantry. For each of these cases of human blindness and for many others, a critic has arisen.[1] It has seldom occurred

[1] See Part II.

to opposing factions of curriculum makers and critics that they might advantageously adopt in part one another's views. Consequently, curricula have been and still are discussed too often upon an emotional rather than upon a scientific basis. All this proceeds from a utilitarian point of view!

The perennial difficulties in the application of utilitarianism imply the existence of stubborn difficulties. These difficulties may be summarized under six points, the first four of which have already been discussed in another part of this treatise: (1) the need for comprehensive analyses of activities; (2) the need for a philosophy of education consisting of a sound interpretation of needs; (3) an integration of the many types of needs — immediate, remote, personal, social, vocational, and nonvocational; (4) a formulation of curricula on this basis; (5) the intelligent administering of such curricula; and (6) the engaging of public support for such a plan. The fifth of these points will be treated in Part VI. The sixth point — the engaging of public support for a thoroughgoing curriculum policy — is left for discussion here.

If desirable curriculum changes are hoped for during the present generation, it is imperative that the best contemporary knowledge of educational matters lead to more effective procedures and that it be more extensively broadcasted than in earlier days. It should be fully understood that the mere possession of greater knowledge or of sound theories may lead nowhere or to little permanent improvement of practices — the stifled voice of John Dury and the frustrated policies of Vittorino attest this point. Only in case researches of the present day are understood and wisely acted upon by the mass of educators, can this generation hope to improve greatly upon the past. Had the best knowledge of

the sixteenth century been widely disseminated and intelligently acted upon, the seventeenth might easily have had better schools than America now has. Effective measures for engaging public support for a soundly utilitarian program form no small part in the success of the program.

The hope of the present day lies, then, in the possibility of integrating the elements of curriculum making. In terms of this chapter the needs of education can no longer be satisfactorily contrasted as either cultural or utilitarian. Curricula must be shown to be of definitely utilitarian character — utilities of many kinds must be defined and provided for in curricula.

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PART V

CURRICULA AND LOCAL CONDITIONS

CHAPTER XIV

COMMUNITY NEEDS AND CURRICULA

What progressive educators should know about their communities. Educators are social workers in the communities and commonwealths which they serve. As progressive social workers, many educators are intimately acquainted with the social conditions of their service areas. Certain types of information must be familiar to classroom teachers, additional types to principals, and still other types to the superintendent.

No less than ten types of community information are essential for successful curriculum planning.[1] (1) The history of a community is often a key to the treatment of many problems. For example, a New England community or a settlement of New Englanders in the Middle West is likely to evidence very different curriculum attitudes from those of Gary, Indiana. Curriculum changes succeed or fail according to the accuracy with which the reformer reckons with the traditions of a community. (2) The modes of administering and financing community affairs often serve either to block or to facilitate desirable reforms. The manner in which certain schools are hampered in the planning of salary schedules or even in ejecting undesirable textbooks is well known. (3) Local industry is a fruitful source of basic and illustrative subject matter. (4) Community health is one of the most pressing objectives of modern

[1] Cf. Margaret F. Byington. *What Social Workers should Know about their own Communities.* Pamphlet. Russell Sage Foundation, 1924.

educators. Plans for technical knowledge, joyous health activities, and permanent health habits are either futile or vital according to whether or not the community's health conditions and health attitudes function so as to lead to intelligent curriculum making. (5) The housing conditions of a community largely govern the educational prospects of children. Housing conditions influence forms of health education to be planned, the amount of home improvement or the amount of home deterioration to be expected, and the amount of work expected of children during school hours. (6) A community may provide recreation which is either educative or degrading, either health-giving or dissipating, either ample or inadequate. Pupils may, as a consequence, need to be trained for participation in activities which are yet to be organized. (7) The character of family life, besides influencing school attendance,[1] affects also many of the same problems as those named above under housing problems. (8) The presence of the foreign-born in many American communities affects the attitudes of parents toward all secondary-school subject matter. Parents who have come from countries whose people do not yet think in terms of secondary education often give little aid in the secondary education of their own children. (9) Certain "problem children" obstruct the training of other pupils and receive little valuable guidance themselves. The progressive teacher instead of discharging such pupils to the unorganized agencies of the communities makes special provision in secondary as well as in elementary schools.[2] (10) The schools themselves need to be critically studied by the educators who practice therein. Some schools, by their

[1] Cf. G. S. Counts. *The Selective Character of American Secondary Education.* University of Chicago, 1922. P. 144.

[2] Cf. W. L. Uhl. *Principles of Secondary Education.* Pp. 312–329.

administration, eliminate promising pupils; by their tradition-bound curriculum practices, misguide other pupils; and, by their marking systems, prejudice the forming of interests of still other pupils against desirable subjects of study.

Additional forms of community knowledge may occur to the reader of these pages. It is the purpose of the two chapters of Part VI to give a somewhat detailed account of the manner in which such community knowledge has been interpreted and of the effects of such knowledge upon the curricula.

Representative American communities. During the past decade many American communities and several commonwealths have been studied and reported upon in connection with school surveys. The present section will discuss the following four types of localities as they are described in survey reports: agricultural types, industrial types, commercial and professional types, and composite types.

1. *Agricultural types.* The survey of the educational system of South Dakota provides an account of the population of the entire state.[1] As 78 per cent of the population of this state reside in the open country or in villages of less than 1000 inhabitants, the state is predominantly rural. With the exception of a very small percentage of the rural inhabitants who are engaged in mining, lumbering, and other minor industries, the rural population is agricultural. Table XIX shows the numbers of persons over ten years of age who were in 1915 engaged in useful occupations.

Of the total population in the same year 15.5 per cent were foreign born; one-half of these persons had resided in the United States more than twenty years, while less than 10 per cent had resided in this country less than five years. An investigation of the ancestral origin of the native Ameri-

[1] United States Bureau of Education, *Bulletin*, 1918, No. 31.

cans of the state showed also that almost three-fourths (73.4 per cent) are German, Scandinavian, Dutch, British, and Americans who came "from families so long settled that knowledge of foreign origin is lost." In spite of this predominant American group, the "assimilation of the foreign elements in the population has been retarded because the

TABLE XIX

Occupations of Population of South Dakota

Occupations	Number of Persons in Each Occupation	Occupations	Number of Persons in Each Occupation
Housewives	118,110	Agents	1,031
Farmers	96,726	Blacksmiths	1,027
Common laborers	19,532	Machinists	1,023
Merchants	6,849	Stenographers	978
Teachers	5,913	Clergymen	916
Servants	4,219	Dressmakers	887
Salesmen	2,863	Contractors	837
Railway employees	2,589	Masons	745
Stockmen	2,418	Nurses	741
Miners	1,910	Bookkeepers	738
Carpenters	1,841	Stationary engineers	680
Officials	1,349	Commercial travelers	319
Bankers	1,277	Dairymen	302
Agricultural laborers	1,214	Electricians	124
Painters	1,050	Druggists	109
		Total	278,317

foreign born have gathered largely in settlements, some of them extending over several counties. Some counties, Hutchinson, for example, are largely peopled by German stock. A large portion of the school population attend German Catholic or German Lutheran parochial schools in which German has been used largely as a medium of instruction.[1] In this county and in Hanson county the German-

[1] Recently stopped by order of the State council of defense.

Russian Mennonites still live the quaint community life brought with them from Russia. German, not English, is the language of the villages, although in most of the schools English is the medium of instruction. The German-Russians have settled chiefly in the north-central and northwestern parts of the State, where they have spread over many counties. Because of numbers, more than for other reasons, have these people been slow to become Americanized. Scandinavians and Swedish Finns comprise a large per cent of the population. They settled the State at an early date and became possessed of the best land; from the first they have taken a leading part in the political and economic life of the state. By reason of their close kinship to people of Anglo-American origin, in tradition, history, and ideals, they are easily Americanized and so form no special problem." [1]

The Rural School Survey of New York State shows that although the increase in rural population during recent decades has been less than the increase of urban population, there has, nevertheless, been an increase both in the number of rural inhabitants of that state and the physical production of New York farms. The educational significance of this growth of rural population and production in connection with tendencies toward urbanization and the development of machinery is pointed out by Works in the following paragraphs:

> It is impossible to predict for what length of time increased use of machinery and horses will make it possible for a relatively declining rural population to meet the demands for the raw products of the farm. It can be said, with a reasonable degree of accuracy, that the time has not yet been reached when the migration from country to city should stop. It is even more certain that not all who are born in the country will find their largest

[1] *Op. cit.*, pp. 6–8.

opportunity for service there. As a result the open country must always have a school system that shall make provision for those who decide to render their service through life in the open country and for those who decide to enter activities that take them to urban centers. The same view from an economic and social viewpoint has been stated by President Waters: "Children born in the country are entitled to as much freedom of choice of occupation as are those brought up in town and are entitled to as substantial help from the public schools in making an intelligent choice. Besides, if we should put to use the country schools as a means of forcing children to stay on the farm we would meet with failure. Every effort along this line which has ignored the fundamental principle of equality of opportunity has been futile."

The school system should not be used as a means of giving rural children a bias for the country any more than it should be a means of persuading urban children to enter vocations in which their parents are engaged. Individuals and society will best be served when the public schools assist young people to arrive at as wise determinations as possible with reference to future careers and then give them the largest possible assistance in preparing for their chosen lines of service. The important consideration from the viewpoint of both country and city is that a fair proportion of the more capable young people who are born and reared in the country should remain there to render their social service. This will be the situation when the financial and other rewards that come to the farmer compare favorably with what his ability, energy, and training would bring him in other lines of endeavor.

It is true that the rural school system should have teachers with an intelligent appreciation of farm life. They should be able, as a result of their experience and professional training, to utilize the daily experiences of the country child to educational ends. Courses of study need adaptation even during the elementary school period in order to supplement the experiences of the country child in those aspects where deficiencies exist. At the proper time in his life the school should be in position to render assistance to the child who has chosen to leave the country as well as to the one who has determined to remain. It is evident then that since, under present conditions, there is no need in the country for all who are born and reared there, and further, that if a true democracy is to be main-

tained that young people who decide that the largest opportunity for them lies in the centers of population, the rural school system of the State must make provision for both groups. For the great majority this preparation should be possible while they are living in their homes.[1]

With a great rural population and with a present level of rural school which continues through the elementary school, New York now faces, as one of its greatest problems, that of providing adequate high-school facilities.[2] After finding by investigation that the present high-school facilities are inadequate for rural adolescents, and that rural boys attend high schools in even smaller percentages than girls do, Works concludes that accessibility, transportation, curricula, expense, and general interest now affect the rural population so as to deprive rural children of secondary education. Even granting that the State could afford to provide rural high schools in the open country, Works holds that the establishment of such schools would as a rule prove inimical to the interests of town and country. A general establishment of such schools would, he believes, aggravate the "misunderstandings, suspicions, and even antagonisms that now exist between the centers of population and the open country." [3] He proposes instead that new population or community units be established as high-school service areas — units comprising as far as possible both farm and village interests, and that curricula be organized so as to reach "beyond the conventional school program for youth." [4]

2. *Industrial types.* Gary, Indiana, was, at the time of the survey of the Gary schools, a city of about 50,000

[1] *Rural School Survey of New York, Vol. 2.* Ithaca, New York, 1923. Pp. 546–7.
[2] *Op. cit.*, p. 550.
[3] *Ibid.*, p. 549.
[4] *Ibid.*, p. 560. The proposed curricula will be discussed in Part VI.

inhabitants.[1] The following account of the occupations and ancestry of the inhabitants of that city raises several of the vocational and civic problems of the industrial localities.

Gary is a steel town. The steel mill workers form the basis and bulk of the population; there are, besides, executives, clerks, shopkeepers, etc., enough to carry on the business of the mills and to sustain the life of the community. Leisure class there is practically none; Gary is a working town. Its occupations center about the production and fabrication of steel, and about such business, trades, and professions as are required to care for a community of, say, fifty thousand people. Complete occupational data are not available, but we know how many young men and women between nineteen and twenty, heads of families with children under twenty-one, and working mothers — a total of 5,321 — are occupied. The data, while covering the principal occupation groups, are, of course, no index to the total number engaged in particular pursuits, and may not show correctly the relative proportions of skilled, semiskilled, and unskilled workers. However, on the face of the figures, it appears that three-fifths of all Gary wage earners are employed in manufacture, and that not more than a fourth of those engaged in gainful pursuits are skilled workmen.

The population of the town is predominantly foreign in origin. In 1910, only 27 per cent were native born of native parentage; 22 per cent more were natives, but both parents of four-fifths of these were foreign born. Thus wellnigh two-thirds of the total population of Gary in 1910 may be regarded as of actual or recent foreign stock.

Of the foreign stock, two-thirds come from Austria, Hungary, Russia, Italy, and Greece, a fourth from Germany, Great Britain, the Scandinavian countries, and Canada, with scattered representatives from almost every other quarter of the globe. A census in April, 1916, limited to persons under twenty-one years of age, makes a similar showing. Of the 12,876 youths about whom we have information,[2] 77 per cent are native born, but only 25 per

[1] Flexner, Abraham and Bachman, F. P. *The Gary Schools; a General Account.* General Education Board, 1918. Chapter I gives an illuminating account of Gary's industries and people.

[2] "These data were collected by the Gary authorities in making the school census of 1916; we tabulated them, following the classification of the U. S. Census of 1910."

cent are of native parents. Both parents of 45 per cent and one parent of 7 per cent were immigrants; 12 per cent had themselves passed through Ellis Island. Thus, of the youth of Gary, 57 per cent belong to foreign stock; that is, are either foreign born themselves or are of foreign parentage. Of this foreign stock, slightly more than three-fourths come from southern and eastern Europe. Since the census of 1910, this contingent has relatively increased; western and northern Europe has contributed relatively less.

It may be safely stated that at the present time two-thirds of the population of Gary are either foreign born or of full foreign parentage. But these foreigners did not all ship direct for Gary; a considerable proportion have gone thither from other American cities, for a canvass of the foreign born heads of families shows that 44 per cent have been in this country eleven years or more, their immigration thus antedating the founding of Gary.[1] A little under half (46 per cent) of the present heads of families with children under twenty-one have been in Gary less than five years, 47 per cent have been there longer, 7 per cent are unaccounted for. Two per cent have been there since the city began, 10 per cent have been there less than a year.

The composition of the population of Gary is an educational factor that needs constantly to be kept in mind. All American cities are more or less foreign, but the Gary situation is distinctly more difficult and complex than is usual. The Gary statistics for general population date back, as before stated, to 1910; since then the population has more than trebled and it is practically certain that this increase has taken place more largely on the non-American than on the native American side. Even so, on the basis of the 1910 figures, 49 per cent of the Gary white population is foreign born as against Boston's 36 per cent, Detroit's 34 per cent, St. Louis's 18 per cent, and Kansas City's 10 per cent, considering the larger cities; and Akron's 19 per cent, South Bend's 25 per cent, and Hammond's 27 per cent, considering the smaller cities of industrial type. Thus Gary has an unusually large proportion of foreigners and continues to receive additional increments with perhaps unprecedented rapidity.[2]

[1] "Data were collected as to heads of families under twenty-one years of age, a total of 4,633—2,772 foreign born, 1,758 native born, and 103 unknown."

[2] *Ibid.*, pp. 4–9.

The housing conditions of Gary are equally pertinent to school curricula. The following paragraphs summarize the findings of the surveyors:

> Most of the dwelling houses in (one) section of the city were erected by the Gary Land Company and sold on easy terms. Though close together, they are comfortable, well lighted, sanitary, and attractive. The monotony is somewhat relieved by other structures — churches, apartment houses, and more ambitious residences, and by the well-kept lawns characteristic of this part of the town. Here dwell nearly one-half of the total population — local corporation officials, skilled steel workers, professional and trades people.
>
> There is, however, another side to housing in Gary. One-half of Gary, as we have seen, lives in decency and comfort; not so the other half. South of the holdings of the Gary Land Company lay a large tract, which was quickly seized by land speculators who undertook to provide shelter for the vast majority of Gary's unskilled laborers. Hundreds of ramshackle houses, generally wood, occasionally brick or stucco, were thrown together. Some accommodate a single family, others two families; still others are two-story structures of indeterminate capacity, twenty-five to thirty feet wide, a hundred or more feet long, with room for a saloon or a small store on the first floor front. For the most part, these structures make little provision for either health or safety. Few of these houses are without boarders, and the boarding houses frequently receive both day and night shifts.[1]

Another industrial community, Wilmington, Delaware, is much older and diversified as to occupations than Gary. The survey of this city in 1915–1916 was so conducted as to discover the scope of the city's industries, the number of young people in industries, and the educational needs of the workers. The following summaries constitute a digest of the findings:

[1] *Ibid.*, p. 11.

a. The industries.

1. The City of Wilmington is a thriving industrial center with approximately one-fifth of its population engaged in manufacturing. The 260 different industrial establishments represent a wide range of industries, several of which are large and important.

2. The range of skill demanded in the industries is large. An unusually large number of workers are employed either in unskilled occupations or in those requiring a low degree of skill. A smaller number are employed in very highly skilled work.

3. The relations between employer and employee are exceptionally good, forming a basis for coöperation in trade agreements and vocational education. Also the labor commission of the State, together with a number of active civic organizations, have made a strong backing for coöperative efforts along these lines. Fairly satisfactory labor laws have been passed by the State, but there is a weakness in the means provided for their enforcement.

4. As usual throughout the country, the apprenticeship system is broken down and trade agreements are almost unknown. Helpers take place of apprentices and there is little opportunity for a thorough and broad training in the industry. Both employers and employees acknowledge and lament this fact.

5. Ninety per cent of the workers who reported were born in Delaware and 80 per cent in Wilmington. To a considerable extent then the city must train her own workers, and they are apt to stay to work in her own industries. This simplifies the industrial education problem.

6. The need for more education, especially of a practical nature, is manifested by both workers and employers. More schooling in the practical arts and in the fundamental subjects of the curriculum is desired by the workers for their children before they leave school. The workers manifest a desire also for evening schools for themselves.[1]

b. The young people in industries.

1. Working permits of two general forms, the one for working outside of school hours, the second for working during school hours, are provided by the State law. With several notable

[1] *Industrial Education in Wilmington, Delaware*, U. S. Bureau of Education, Bulletin No. 25. 1918. Pp. 40–41.

weaknesses, these provisions of the law are reasonably satisfactory. The chief weakness in them is in the lack of sufficient means for their enforcement.

2. The granting of working permits being in the hands of the public school officials, little effort seems to be made in enforcing the provision in respect to colored children and to pupils who attend parochial schools. Facilities are not adequate for doing this. Full and sufficient reasons for going to work do not seem to be required of applicants for working permits. Notable failure to require children either to be in normal physical condition before permits are granted, although the law requires this, or to have made normal school progress, is clearly shown. It is the poorly developed child physically and the one who is over age in his school work that makes application for these permits.

3. The schools are not holding the boys and girls as they should. As soon as the law permits them to go to work they leave school, not because of urgent necessity in the majority of cases, but because they are behind in their studies and discouraged and preferred to go to work rather than to continue in work that promised no direct help in fitting them for earning a living.

4. The tables show that the employment-certificate children are not, on the whole, efficient in their "jobs" or willing to learn, as they change from job to job for a small increase in wage or for the mere novelty of a change. It would be better if the schools could give more practical work and hold them for such training as would fit them for positions of more promise for the future.

5. There is apparent in these frequent changes of "jobs" a lamentable lack of moral obligation on the part of the children. These conditions should be investigated further and, if possible, means found in the school for remedying them.[1]

3. *The educational needs of workers.* The needs as expressed by the workers indicated a demand for the following courses in the regular public high schools: mathematics, drawing, reading and English, blue-print reading, estimating, physics, chemistry, sanitation, civics, and a study of industries. The needs as expressed by the employers indicated a

[1] *Ibid.*, pp. 61–62.

demand in the regular public high schools for the same subjects and, in addition, for manual training, mechanics, and foundry practice.

4. *Commercial and professional types.* The city of Brookline, Massachusetts, was found in 1916 to be in certain respects a part of the metropolitan district of which Boston is the center.[1] Despite a tendency toward cosmopolitanism, the population of Brookline was, however, found to consist of a very high proportion of men and women in positions of the highest social and economic rank.

> Among the men there are practically as many proprietors and firm members, or those who carry the financial and managerial responsibility, as clerks and other subordinate salaried employees, and when to the proprietors are added the salaried superintendents and managers their number exceeds the number of laborers and wage earners by 200. While the proportion of men engaged in manufacturing and mechanical pursuits is less than one-half that usually found, almost half of them are either proprietors or managers. The same distribution of large numbers in high positions holds even more strongly in trade, with this added weight, that there are more engaged in trade than in any other calling and almost two-thirds more than in the typical American city.
>
> The number of women in high position is likewise notable, notwithstanding the small percentages in that column caused by the unusually large numbers of house servants — probably the highest proportion of all cities in the country. While the number engaged in manufacturing and mechanical pursuits is less than one-fourth the normal for American cities, yet over seven out of 10 are proprietors or managers. A similar situation exists in the trades; although only one-third the normal number are engaged, one out of every five is in the highest rank. It is to be noted also that only one-half the usual number are in clerical positions.
>
> The large proportion of men in professional service and the large proportion in the highest class of positions, both among men

[1] J. H. Van Sickle *et al.* *Educational Survey of the Public Schools of Brookline, Massachusetts.* 1917.

and women, within this group is still another noteworthy characteristic.

The large number of men engaged in agriculture, forestry, and animal husbandry is caused by the large number of estates in the southern part of town, while the larger number of laborers and wage earners in transportation than would be expected from a consideration of the above figures is caused by the fact that a terminal of one of the Boston car lines is situated in the town just above the Village. Brookline is a town of residences and the business and manufacturing establishments are relatively few.[1]

This city whose percentage of illiteracy among her foreign born was the lowest of all American cities of her size, and whose assessed and real valuation per capita of population is one of the highest of the United States, has also a sordid side.

The homes and the family life must and do represent as wide a variation as the scope of wealth, and the children coming from these homes possess just as varying past experiences, knowledge, habits, tendencies, and health as those wide extremes would produce. Below the Village, in the vicinity of the Parsons School and radiating out from the center to the south and west, is a community that can as properly be called a slum district as certain portions of Boston or any other large city. The three-story frame buildings, containing six flats of three rooms each, with their dark, dirty halls and loathsome sanitary provisions, are set closely together so that there is little air or lighting space. The streets are narrow, and disorder and neglect are everywhere apparent. The social conditions provided by such homes and the poverty that exists in them present a real problem to those who have in charge the public schools. In vivid contrast are the magnificent homes upon the hills, many of them with a large acreage, some of whose owners send their children to private schools in the town, city, or surrounding suburbs. These latter children have an entirely different past, different tastes and habits, different destination in life, and some of them present difficulties altogether as great as, if not greater than, the children of the poor.[2]

[1] *Ibid.*, pp. 37–38. [2] *Ibid.*, p. 40.

On the other side of the continent lies San Francisco. This city, like Brookline, has cosmopolitan aspects. It is, however, a business and professional man's city rather than an industrial worker's city.

San Francisco is a young and vigorous city. In less than three-quarters of a century, within the lifetime of many men and women who now live within its borders, it has from a small struggling village become one of the great and important cities of the world. Its location at the doors of the continent through which must pass much of the life and business of the continent affects inevitably its character, its growth, and its development. Its cosmopolitan population makes possible for it a rich and varied culture. Its open climate and its geographical environment contribute to freedom of outdoor life, to love of pleasure, and to development of artistic temperament.

Few other communities in the world are so able to maintain their schools and to supply them abundantly with all buildings, equipment, and teachers that may be needed for their highest efficiency, at whatever cost may be necessary.

California is, in proportion to the number of children of school age, one of the richest States in the world, probably surpassed in this respect by only one, and the estimated value of property in San Francisco as compared with the number of children of school age is much larger than in any other city of its class in the United States. It has more than twice the average in the other nine cities having a population between three and five hundred thousand.

The proportion of men and women of producing age to children of school age is very large in San Francisco. The proportion of men of producing age to children of school age is more than twice as large as the average population in the four cities of Buffalo, Newark, Milwaukee, and New Orleans, and is 60 per cent larger than the other nine cities of its class. Neither the city, nor the State in which it is located and of which it forms a part, is burdened with debt, and both city and State have considerable vested school funds and school lands of increasing value.

Like other Western States and cities, California and San Francisco have adopted many advanced principles and methods in their political government and civic life which demand for their

proper functioning universal intelligence and virtue of a very high grade, which can be had only through universal education of an equally high grade, just as the wealth and material prosperity of the State and city require broad and sound culture and high idealism as protection against the corruption of material wealth and death in the din and dust of trade.[1]

5. *Composite types.* Many communities and commonwealths have more than one major characteristic of industry. Such a commonwealth is the State of Alabama. Although this state is preëminently agricultural, it also contains industrial Birmingham — the Pittsburgh of the South.

The State has not yet emerged fully from the old land economy period of agriculture, which in the South was marked by the old plantation system of owners, overseers, and slave land tillers. Since the reconstruction period the system has suffered largely from absentee landlordism and tenant farming. The large plantations are gradually, however, being reduced in size and the number of operators is increasing accordingly. In 1910 there were 262,901 operators of all kinds; of these, 103,929 were classed as owners, 646 as managers, and 158,326, or 60.2 per cent of all, as tenants, known variously as share tenants, share cash tenants, and cash tenants.

The old system of farming has proved economically unsound. The colored tenants have made no headway. In ordinary years they are "carried" by the landowner, the overseer, or local merchants until the crops are made. If the crops are good both owner and tenant have a fair margin. But in exceptional times — such as the last five or six years — the system has been breaking down. The low cotton prices in 1913–14 made the beginning of the break; it was aided by the boll-weevil plague and the destructive flood in 1916. This seeming calamity was probably the most fortunate thing that could have happened. Because of it the one-crop system is now yielding to diversified farming. Cotton culture has been reduced to 55 per cent of what it was four years ago. This

[1] *The Public School System of San Francisco, California.* United States Bureau of Education, *Bulletin*, No. 46, 1917. P. 21.

reduction has been more than made up in value by increasing crops of corn, alfalfa, hay, velvet beans, peanuts, and raising better live stock. Because of shortage in labor many plantations are being turned into dairy or stock farms; alfalfa and cow peas are produced in increasing acreage to provide fodder and to supply humus and nitrogen for the land. Pure-bred stock, both dairying and beef types, have been introduced from the North. This has revolutionized the live-stock industry and has actually doubled the number of cattle in the State in three years' time. An era of scientific agriculture is apparently about to take its beginning in the State.

No state is more fortunately situated in regard to urban industries than is Alabama. The Birmingham district is rich in bituminous coal and iron ore; and the limestone necessary for fluxing the iron is abundant in the same region. The Coosa-Alabama River system affords unlimited power possibilities and the raw cotton is produced within easy reach of the cotton mills. In 1879 only 10,000 wage earners were employed in manufactures in the State; by 1910 this group of workers had reached about 83,000. The total value of manufactured products increased during this time from $13,566,000 to $145,962,000 or more than tenfold. The growth in manufacturing has been so tremendous as almost to overshadow for the time being, in the minds of many, what must always continue to hold the first place in the State's activities — i.e., agriculture.[1]

In addition to having diverse occupations represented within her confines, this state has population problems which are more difficult than those of any other localities that have been reviewed. "Like other Southern States, Alabama has the problem of two races." [2] Owing to the social attitudes of the two races and the economic conditions of many members of both races, the educational problems in Alabama attain proportions such as are seldom met even in northern communities whose foreign population is excessive.

[1] *An Educational Study of Alabama.* United States Bureau of Education, *Bulletin*, No. 41, 1919. Pp. 15–16.
[2] *Ibid.*, p. 17.

One of the most complete community analyses now available is the analysis of Columbus, Ohio, reported by McKenzie.[1] Although that analysis was not conducted primarily to show the educational needs of the city, it does indicate many of the intricacies which surround any attempt to adapt curricula to the local conditions of any cosmopolitan district.

Variations among representative American communities. Four general types of American communities have been briefly reviewed: the agricultural, the industrial, the commercial, and composite types. It is, of course, to be understood that this list of types is not offered as a complete list of all types. Within these four types there are, however, certain important variations.

As far as the duties performed in the communities are concerned, there are wide differences between South Dakota and Brookline. In South Dakota most boys and girls who remain in the state will engage in activities which are closely allied to agricultural pursuits; in Brookline, however, most boys and girls who remain in the city will engage in or be directly supported by the rewards of commercial or professional pursuits. The boys and girls of South Dakota are reared in the midst of activities about which the children of Brookline may be required to study in order merely to acquire a superficial knowledge of middle western life; the children of South Dakota may well be required to study by means of books much that Brookline children can see at first hand. The problems of training the foreign born within their confines vary as widely as do those of training the native stock. South Dakota contains relatively small numbers of isolated unassimilated groups; these groups comprise,

[1] McKenzie, R. D. "The Neighborhood: A Study of Local Life in the City of Columbus, Ohio." *American Journal of Sociology*, XXVII, 145–168, 344–363, 486–509, 588–610, and 780–799. 1921.

for the most part, persons whose standards of life, though different from the standards of native stock, are, nevertheless, high. Brookline, on the contrary, contains an increasing number of foreign born whose standards are both different from and lower than the standards of the early inhabitants of that city.

Although Gary and Columbus are in many respects composite types of communities, they represent, in certain other respects, unified and composite types, respectively. Gary, with a dominant industry in which tens of thousands of men are engaged, is a community in which the needs of a vast industrial organization are somewhat unified. Columbus, with many communities within a large community of diversified interests and activities, is a city whose local occupational requirements point to no one form of life as the probable form which will be pursued by the young men and young women who remain within her gates. Comparatively large and densely populated areas of Gary present acute problems of assimilation. Comparatively small areas of Columbus present somewhat the same degree of acuteness in regard to the same matter. Still further it may be said that the stabilizing influences which follow the concentration of the state's governmental and higher educational activities at Columbus constitute a valuable field of observation for the children of that city as the concentration of the steel industry presents a very different form of training for the youth of Gary. To the extent that illustrative materials are drawn from local occupational activities, these two cities provide quite different subject matter for their young.

In addition to these somewhat obvious but important community differences, there are other variations some of which are quite as significant in curricula planning as the

variations already named. First, the history of certain communities provides reasons for conditions which to the superficial observer appear unwarranted. For example, vested interests in ignorance are found to prevent one wealthy community from discarding the form of elementary school which foreign countries operate solely for the helpless or ignorant masses. Such communities can be sharply contrasted with those extensions of the New England frontier which dot the Middle West and provide examples of the educational effects of academic leaven.[1] Second, there are great variations between the abilities of different communities to pay for educational facilities. Callahan found, for example, that one county of Wisconsin possessed only $2900 of actual taxable wealth for each child on the school census, while another county possessed $14,400.[2] Similarly, Swift found in Arkansas one school district whose total assessed valuation per child enrolled in school was only $101, while that of another district was $21,538.[3] Again, of eighteen cities, it was found that the per capita true valuation of property of Brookline was, in 1912, four times that of another commercial and professional community.[4] Third, differences in health conditions require that children in certain communities be trained to combat occupational or other local conditions. Typhoid fever, as an instance, was, in 1916–1917, three times as prevalent in Alabama as in the United States at large.[5] Fourth, recreational differences range from those in which few unequipped open

[1] Cf. Lois Kimball Mathews. *The Expansion of New England.* Houghton Mifflin Company, 1909.

[2] Callahan, John. *Equalizing Educational Opportunity in Wisconsin.* Department of Public Instruction, Madison. 1924. P. 7.

[3] Swift, F. H. *The Public Schools of Arkansas;* Part II, *Public School Finance.* United States Bureau of Education, *Bulletin* 1923, No. 11. P. 20.

[4] *Educational Survey of the Public Schools of Brookline, Massachusetts.* P. 41.

[5] *An Educational Study of Alabama.* United States Bureau of Education, *Bulletin* 1919, No. 41. Pp. 302–303.

spaces or parks exist to those in which ample playgrounds, community houses, and other recreational centers are provided. Certain neighborhoods of Gary offer only the streets and commercialized amusements to children and adults, while other neighborhoods, owing to their proximity to parks and public school grounds and buildings, have fairly adequate recreation facilities. Fifth, schools of different sizes vary, as a rule, in their abilities to give the greatest possible returns for each year of schooling. As evidence of this, Pittenger found that at present, "whatever the reason, graduates of the larger high schools may be expected slightly to surpass the graduates of the smaller high schools, when both reach college." [1] Sixth, many differences in school traditions render certain communities relatively undesirable for certain pupils. For example, the teachers of one New Jersey city were, in 1915, unable to develop an acceptable proficiency in more than 66 per cent of their pupils,[2] while another school, Berkeley, attempts by expert counseling before a curriculum is elected and during the pursuit of it, to enable each pupil to attain a proficiency which is satisfactory.[3] Seventh, it has been found also, as will be shown in a later section of this chapter, that schools vary considerably in the services which they attempt to render to the different occupational groups of their respective localities.

The significance of variations among communities. It is usually regarded as obvious that the service area of a high school should be considered in the planning of curricula.

[1] Pittenger, B. F. *The Efficiency of College Students as Conditioned by Age at Entrance and Size of High School.* National Society for the Study of Education, *Sixth Yearbook*, Part II, 1917. P. 109. Some of the reasons for this condition are found in the meagre curricula of small high schools — see L. W. Smith, *Illinois High Schools.* Springfield, Illinois, State Department of Public Instruction. 1917.

[2] Uhl, W. L. *Principles of Secondary Education.* P. 248.

[3] Cf. *ibid.*, pp. 379–390.

Just what significance the characteristics of a given area have with relation to curricula is not always made clear. Many school surveys, including some of those already cited, deal with this matter. For the present discussion, it seems best, however, to review an investigation which was conducted by Waples, and then attempt to relate the results of that investigation to the results of such activity analyses as those described in Chapter IX.

Waples found out the occupational representation in the Homestead, Pennsylvannia, high school and classified the groups of occupations found as follows:

Homestead Group *A*

1. Proprietors (bankers, landlords, manufacturers, merchants, publishers, shopkeepers, etc.)
2. Professional service (artists, authors, clergymen, dentists, engineers — civil, electrical, mechanical — lawyers, musicians, pharmacists, teachers, etc.)
3. Managerial service (agents — express, railroad, telegraph — contractors, managers, officials, inspectors, etc.)

Homestead Group *B*

4. Commercial service (agents — real estate and insurance — buyers, clerks in stores, salesmen, etc.)
5. Clerical service (accountants, bookkeepers, other clerks, etc.)
6. Agricultural service (dairymen, farmers, fruit-growers, etc.)
7. Artisan-proprietors (all artisans who own the shops in which they work, including bakers, barbers, draftsmen, electricians, machinists, printers, etc.)

Homestead Group *C*

8. Building and related trades (carpenters, electricians, sheet-metal workers, structural iron workers, etc.)
9. Machine and related trades (designers, draftsmen, engineers, firemen, founders, mechanics, millwrights, molders, pattern-makers, tool-makers, etc.)
10. Printing trades (bookbinders, compositors, pressmen, etc.)

11. Miscellaneous trades in manufacturing and mechanical industries (local steel mill workers, such as machine operatives, all semiskilled labor, second helpers, other helpers, etc.)
12. Transportation service (baggagemen, brakemen, chauffeurs, etc.)

Homestead Group *D*

13. Public service (firemen, guards, marines, marshals, police, etc.)
14. Personal service (barbers, chefs, cooks, janitors, porters, sextons, waiters, etc.)
15. Miners, lumber-men, and fishermen.
16. Common labor.

Homestead Group *X* is used to include those pupils who reported their fathers' occupations in such general terms that it was impossible to classify them.

17. Occupation unknown.[1]

It was then found that the 587 pupils of the Homestead High School represented these population groups as shown

TABLE XX *

THE PERCENTAGE OF HOMESTEAD HIGH-SCHOOL PUPILS IN EACH OCCUPATIONAL GROUP

	Group A	Group B	Group C	Group D	Group X	Total
Grade IX	28.7	33.9	43.5	61.5	51.0	42.8
Grade X	17.0	21.5	26.1	28.9	22.9	23.5
Grade XI	31.9	31.5	23.9	2.4	18.8	23.0
Grade XII	22.4	13.1	6.5	7.2	7.3	10.7
All grades	16.0	22.2	31.3	14.1	16.4	100.0

* Waples, *op. cit.*, p. 539.

in Table XX. Next, a number of simple and definite criteria were devised so as to "indicate the extent to which

[1] Waples, Douglas. "Indexing the Qualifications of Different Social Groups for an Academic Curriculum." *School Review*, XXXII, 538–539. September, 1924.

each group is qualified to benefit by the single academic curriculum." In selecting such criteria it is, of course, important that each should have a real bearing on the pupil's likelihood of success in the type of studies offered. That part of the questionnaire which contains these criteria is here reproduced. It includes such items of Counts' questionnaire as were found to secure the data desired. The assumptions underlying the choice of the criteria are indicated in the comments which follow the items. These comments, of course, did not appear on the blank used.

Your grade? A or B? Your Age? Years.....Months.....

Is there a telephone in your home or in the home in which you live? (It is assumed that a home with a telephone is more likely to provide the social contacts which render academic "culture" desirable than a home without a telephone.)

In what country was your father born? Your mother? (It is assumed that the child of native-born parents is to some degree better able to make social adjustments in school and recognize the bearing of his academic studies on American institutions.)

What language is usually spoken in your home? (It is assumed that the use of a foreign language at home handicaps the pupil to a considerable extent in most academic studies.)

What is your address? Street.....Number.....
(These addresses were classified to show the amount of monthly rental, which is assumed to indicate the character of the pupil's physical surroundings and the pupil's intellectual outlook to some extent.)

How many grades in school did your father complete? Your mother? (It is assumed that the pupil whose parents have had some academic secondary schooling is more likely to benefit by such study himself than the pupil whose parents have had none.)

Check all of the periodicals and magazines listed below to which your parents subscribe or which they buy and read every month:

Short Stories	Business Journals	Weekly Reviews	Literary Magazines
Saturday Evening Post	*Retail Grocer*	*Independent*	*Atlantic Monthly*
Photoplay	*American Druggist*	*Literary Digest*	*Scribners*
McCall's	*Law Review*	*The Nation*	*Harpers*
Wild West Monthly	*Steel Review*	*New Republic*	*Century*
(Add others like these)	(Add others like these)	(Add others like these)	(Add others like these)

(It is assumed that the pupil whose parents read magazines or any periodical literature of some literary excellence has an advantage in approaching such studies as English, foreign language, and history.)

Do you expect to complete your high-school course? If not, why not? (It is assumed that the intention to complete the high-school course has a favorable effect on persistence in school and that persistence in school until the upper grades are reached adds greatly to the value of the academic program as a whole.)

What do you intend to do to support yourself after leaving school or college? (It is assumed that the preparatory value of the academic program is largely confined to those pupils who enter college or professions which require further study of subjects begun in high school.)

What is your father's present occupation?

Where or for whom does he work?

Is he owner or part owner of the business in which he works?

If you have a guardian, what is his present occupation?

It should be noted that the assumption on which the foregoing criteria are proposed by no means implies that the pupil group which meets all these criteria should elect an academic program where others are available. The converse, however, is implied, namely, that the pupil group which fails to meet any one of these criteria is to that extent less qualified to profit from an academic curriculum than

the pupil group which meets them all. Applied in combination, the criteria, so interpreted, clearly reveal significant differences in the qualifications of the groups for the single academic program offered in this school. Table XXI indicates the extent to which each criterion is met by each of the occupational groups.

TABLE XXI

THE PERCENTAGE OF EACH GROUP WHICH MEETS EACH OF THE CRITERIA PROPOSED *

	GROUP A	GROUP B	GROUP C	GROUP D	GROUP X	ALL GROUPS
1. Have telephones at home	67	48	22	15	22	32
2. Have native-born fathers	61	70	59	37	52	58
3. Speak English at home	97	94	86	64	90	87
4. Pay more than $40 a month rent	79	68	55	29	33	56
5. Parents average nine or more grades of schooling	54	32	22	6	15	27
6. Parents read literary magazines	40	18	23	21	31	26
7. Intend to complete high-school course	96	98	90	81	97	92
8. Intend to enter occupations of Group A	77	48	42	31	45	49
Total	571	476	399	284	385	427
Index number (Total divided by 8)	71	60	50	36	48	53
Percentage of total enrollment to which number applies	16	22	31	14	16	100

* The average of the percentages for each group is expressed as the index number for the group. The index number represents the extent to which the group is qualified to benefit from the single academic curriculum on the basis of the assumption.

It is evident that the index numbers shown in Table (XXI), like all such group ratings, are no more reliable than the assumptions on which the criteria are based and in the case of the criteria numbered six and seven, at least, the data themselves are probably inaccurate. While these inaccuracies are sufficiently eliminated

by the pupil conferences which follow the filling out of the questionnaire, the purpose of this account is merely to suggest the value of the raw data as a basis for fruitful discussion by the staff and for whatever further investigation the authorities in a given school may be able to undertake.

When the data contained in Table (XXI) were discussed by the Homestead staff, various implications were suggested as pointing toward remedial measures. These implications, as worked out for and by the staff in the form of recommendations, are here outlined in order to suggest the immediate purposes which data thus readily collected and tabulated may serve in any high school confronted by the problem of enriching a single academic curriculum. Only the first steps are outlined, since these lead to more extensive and adequate readjustments which can seldom be made until the progress resulting from these first steps has become recognized by the community and has justified the provision of the necessary facilities for research.

Recommendations for Administration

1. *The academic curriculum.* — The ninth grade deserves first attention. That at least the 70 per cent of its members who belong to Groups B, C, and D would profit more from different courses may be safely inferred from the elimination of 45 per cent of the ninth-grade enrolment before the tenth grade is reached and from the discrepancy between the courses offered in this grade and the assumed needs of pupils in these groups. The present ninth-grade courses are ancient and medieval history, English, general science, and algebra.

It is therefore recommended:

(*a*) That community civics take the place of ancient history and include a survey of the major occupations in the Pittsburgh district.

(*b*) That algebra be made elective or that an alternate course in applied mathematics be offered for noncollege pupils.

(*c*) That physical education be required and granted sufficient time in the schedule to accomplish the desired results.

(*d*) That the present ninth-grade course in English be supplemented, when possible, by a parallel course for noncollege pupils.

This course should consist of readings more closely related to the present interests and probable future activities of those pupils who fail to respond to the course as at present organized.

(*e*) That similar parallel courses in other required subjects and in other grades be introduced so far as the size of the classes permits, choice of either course to be granted to those pupils whose previous work has been satisfactory in the given subject.

2. *The activity program.* — Each pupil in the school was given a list of all the more common high-school organizations — teams, clubs, councils, etc. — and asked to check those in which he most wished to participate and also those from which he believed the school would profit most. The index numbers show plainly the importance of such activities as may constitute social attractions for pupils of all groups. It was therefore recommended:

(*a*) That the *school* activities receiving a majority vote be gradually introduced under faculty guidance and on the responsibility of the student body.

(*b*) That *group* activities be organized by volunteer teachers whenever and for so long as the number of active participants is at least fifteen.

(*c*) That a double period each week be reserved for activities.

3. *Pupil Diagnosis.* — Until pupil diagnosis is more definitely undertaken in Grades VII and VIII the need for diagnosis in the ninth grade is acute, as indicated by the range of index numbers. It is therefore recommended:

(*a*) That each department continue the general survey reported by surveying the pupil backgrounds more extensively and in terms of specific units of the subject matter taught. In each required subject the content should be definitely related to these backgrounds. This should be more readily accomplished if parallel courses are offered as suggested.

(*b*) That the teachers in charge of activities contribute systematically to a "guidance file" of such pupils as are reported to be out of alignment by the home-room teachers.

(*c*) That a simple testing program be organized to secure correlation between ability in ninth-grade studies, social status, and vocational prospects with special reference to better provision for ninth-grade pupils in Groups C and D.

4. *Supervision.* — Broadly speaking, the problem of high-school supervision is and always has been how to get it rather than how to improve it. A useful expedient is to make the most of interdepartmental visits in the school and for the staff to discuss in conference with the superintendent or principal such procedures as have been found effective in closely relating the classroom activities to the community and individual activities revealed by the departmental surveys suggested. It was therefore recommended:

(*a*) That interdepartmental visits be encouraged by the appointment of definite times for such visits.

(*b*) That specimen assignments be submitted by each department to indicate the progress made in relating classroom activities to those extraschool activities which study of the given subject should teach pupils to perform.

Recommendations for the Teaching Staff

1. *Instruction in how to study.* — Whatever progress is made in selecting subject matter with reference to the pupils' present and future needs, the extreme differences in social environment represented by the index numbers suggest that the same presentation of subject matter will not be the most helpful for all pupils. Methods of helping pupils to learn must be more largely individualized. It was therefore recommended:

(*a*) That subject matter be organized, so far as possible, in the form of things to be done in the classroom (unit exercises) on which the pupils may work during the period as soon as sufficient explanation and demonstration has been given by the teacher.

(*b*) That the teachers use the time when the pupils are working on exercise materials for the purpose of teaching individual pupils or small groups of pupils how to meet the particular difficulties which confront them in the preparation of such assignments, in general accordance with the Miller directed-study procedure.

(*c*) That instruction in all required subjects be guided by the assumption that for pupils in Groups B, C, and D (68 per cent of the school) mastery of the technique of study is certainly equal in value to mastery of the subject matter prescribed.

2. *The degree to which prescribed subject matter should be mastered.* — The wide differences in probable future needs, particularly in the ninth grade, suggest that intensive drill should be largely confined to those few skills in English, science, and social science of which all pupils will make extensive use. It was therefore recommended:

(*a*) That each department designate the minimum essentials for each course with reference to the given pupils.

(*b*) That greater time and emphasis be given to applied classroom activities which involve reflection upon community and other social problems and the appreciation of significant points of view.

(*c*) That, pending the introduction of an effective guidance program, sound appreciation of the scope and value of each course as a whole be systematically taught at the outset. Such appreciations should be taught in terms of the direct values of the course rather than in terms of its indirect values, which are usually distorted by the teacher's personal enthusiasms; that is, the pupils should be shown the extent to which they are likely to be held responsible out of school for the same vocational, social, or leisure activities that they will learn to perform in meeting the requirements of the course.

Conclusions

The following conclusions seem justified with regard to the general application of the procedure described: (1) Parental occupation is a significant factor in the determination of case groups among high-school pupils. (2) The extent to which such groups are qualified to profit by the academic program of the small high school is indicated to a useful degree by the criteria proposed. (3) Index numbers derived from these or similar criteria may furnish a basis of comparison among single-curriculum high schools, since the range of index numbers indicates the degree to which the given pupils can be served by *any* single program. (4) Where the range of index numbers shows the need for more adequate provision for the lower occupational levels, the preliminary steps recommended should prove feasible under the usual conditions.[1]

[1] *Ibid.*, pp. 540–546.

If one is to apply the results of community surveys, one must classify the specific needs of communities in question. Next, the needs must be examined to find out what curriculum activities will aid in the attainment of them. It is believed that all the variations between communities can be classified so far as needs are concerned under the ten general objectives named on page 299.

If, then, it is discovered that 130 pupils of Homestead are found not only to be sons or daughters of workers in Group B, but also to be prospective workers of that group — a purely hypothetical assumption — the next step would be to find out how many were planning to become secretaries, how many agriculturalists, etc. The third step would be that of applying to the Homestead school the findings of Charters with reference to secretarial duties.[1] If it were found also that 184 pupils expected to enter Group C and that a goodly number would enter the printing trades, a study of Strong and Uhrbock's investigation would be in order.[2] This investigation led these men to proceed as follows after the many specific duties of the commercial printer had been catalogued: (1) the aims and scope of a printer's education were determined; (2) the strictly practical aim and scope of a particular course in printing were agreed upon; (3) duty specifications and sources of subject matter were roughly formulated into seventeen groups:

1. Advertising
2. Allied trades to printing
3. Chemistry
4. Cost accounting
5. Drawing
6. Economics
7. English
8. Estimating
9. Foremanship
10. Handling men
11. Industrial management
12. Law and contracts
13. Mathematics
14. Preparation of reports
15. Purchasing
16. Selling
17. Shop processes

[1] See page 311.

[2] Strong, E. K. and Uhrbock, R. S. *Job Analysis and the Curriculum.* Williams and Wilkins Company, 1923. Especially Chapter IV.

All items in the job specifications were accordingly assigned to one or more of these somewhat arbitrarily selected headings. Thus the duty of "breaking in new foremen" was recorded under the three heads of "9. Foremanship," "10. Handling Men" and "17. Shop Processes." All of the data pertaining to each of the above seventeen headings were then grouped together.

The problem of determining the type of knowledge employed in performing different duties was solved empirically. While collecting the data the job analysts constantly were asking themselves, "What ought to be taught in order to fit men to perform this or that duty?" For example, sales managers, general managers and presidents frequently were called upon to meet customers and to explain the details of a piece of printing to them. For a man to perform this apparently simple duty it is necessary for him (1) to have some training in *English* so that he can explain in an understandable way just what can be done. . . . As he talks to the customer he should know (2) some of the technique of *handling men.* Familiarity with (3) *shop processes and shop methods* is a valuable asset in determining the length of time required to do a job, the cost, and the appearance of the finished work. The man who meets customers should know (4) *how to estimate.* Whether or not an order is placed may depend upon this factor alone. He should know something of (5) *drawing, lettering, and free hand sketching,* so as to illustrate what he says and to "sell his ideas" concerning design to the customer. (6) *Mathematics* is necessary so as to figure sizes and weights of paper and cost of finished work. Frequently, when large orders are placed, or when several editions are required, a contract is drawn up and signed. Here some knowledge of (7) *law and contracts* is of value. The executive should know something about (8) *the allied trades to printing,* particularly engraving, so as to place that information at the disposal of the customer. Finally, a knowledge of the principles of (9) *advertising* and (10) *selling* contribute to the success of the man who hopes to dispose of his product. The complexity of the duties of the average executive is not realized until they are analyzed in this way. Then the problem of building a curriculum to train executives assumes gigantic proportions.[1]

[1] Strong and Uhrbock, pp. 75–76.

English, for example, was included among the specifications and names of subject matter because of the fact that English embraces duty specifications discovered in the antecedent trade-analysis. That is, one objective of the course in English is that of learning to "express more or less technical ideas in a form which will secure the attention and action of another executive." [1] This objective was interpreted as involving "among other things, the handling of topic sentences; avoidance of ambiguous expressions; the expression of ideas in their logical order, and the emphasis and forceful expression of important points." [2] This particular objective grew out of such duty specifications as the following:

1. Preparation of reports to be forwarded to the local Secretary of the United Typothetae of America.
2. Periodic reports to the president of the firm concerning supplies and material on hand.
3. Recommendations concerning the purchase of new equipment.[3]

Finally, the specific terms of subject matter were selected with reference to duty specifications, and the whole course was organized for instructional purposes. The fact that every worker has more than his purely vocational duties to perform and that his vocational duties are not entirely mechanical was recognized in the ultimate organization of the printing curriculum. The important point for the curriculum maker is that one objective was derived from specific duty specifications and then the objective was carried out as far as to provide subject matter and suggestions for teachers' emphasis. If life in general were as fully analyzed as the printing trade seems to have been, a similar procedure could be followed with reference to the duty or activity specifications of the nonvocational aspects of life.

[1] *Ibid.*, p. 78. [2] *Ibid.*, p. 78. [3] *Ibid.*, p. 78.

If the program which is implied in the foregoing pages were applied to each of the communities whose conditions have been reviewed above, the results would be that insofar as possible each community would be analyzed into its occupations and with reference to the occupational expectancy of its youth; next, the occupations would be analyzed into their duty specifications or specific tasks; third, courses of study would be provided, as far as practicable, to meet the specific needs of all pupils; and, fourth, the local conditions, such as history and traditions of the school, ability to pay, tendencies of youth to migrate or to remain in the community, and so forth would determine the final form of curricula to be provided.

Out of community analyses there have been drawn many instances of intercommunity variation. Such variations have been given a prominent place in this chapter not because there are no typical intercommunity resemblances, but because specific variations have in the past been largely overlooked. As soon, however, as America undertook actually to launch plans for universal secondary education, variations acquired a new significance. With the differentiation of school population came a demand for differentiation of the curricula of the school itself. Present-day emphasis upon local educational needs as determinants of curricula grows directly and mainly from the attempt to make the high school a finishing school for the masses as well as a preparatory school for prospective college students.

Typical characteristics of communities. The variations among communities do not cover all the aspects of communities. Neither do curriculum changes, which are designed to meet the specific and unusual conditions of certain localities, undermine the secondary-school program of studies and lead to nothing but diversification. Instead, a striking

characteristic of all communities is that they have so much in common that they, therefore, require the same basic curriculum elements. These common elements have already been found to characterize different historical periods. The present age has a common program of studies much of which has been refined by and filtered through ages of use under conditions even more diverse than the sum total of variations among American communities.

In all the American communities which are concerned with secondary education, it is desirable that the English language be spoken correctly and fluently. It is desirable also that certain canons of writing and of reading be instilled into all pupils. Each of the ten major objectives of education is attainable in part through studies in English language and literature. Science has, throughout man's historical era, served either as the tyrannous ruler of the blind or as the enlightening guide of the far-seeing — tyrannous during the ages of intolerant superstition; enlightening during years of inquiry. The two companions, ignorance and intolerance, must be driven out of all communities by science and inquiry. Mathematics, "the studies" of the Greeks, finds no man's life closed to its services. Likewise, the social studies aid every worker from clerk to president. The arts — music and fine art — enrich the lives of all whose beings respond to their appeal, although the labors of one's calling may be no more affected by these arts than by the art of poetry. He who looks askance upon the effusions of admirers of these arts should ponder as to whether the value of the fine arts is less well known than the value of vocational subjects. It has been suggested that the curriculum maker note with care the analysis of duties of workers, but it is suggested with at least equal emphasis that the curriculum maker pay special heed to the nurture

of desirable traits. And until educational science has traveled far beyond its present station there can be no certainty that direct training in formal skills is of more worth than indirect training in informal arts. Subjects such as English, science, mathematics, social studies, and the fine arts, if not of precisely equal value in all communities, are yet the training by means of which the youth of each community prepare themselves for all other communities. As long as these subjects and others like them remain the media of social exchange and at the same time progress as society changes, so long may community specifications — duties or activities or attitudes — be interpreted as demanding them.

How the secondary school reaches the community. For eight decades the American high school has reached nearly all population groups. Before the middle of the nineteenth century it was a matter of great pride upon the part of distinguished high-school principals that their schools drew boys and girls whose parents were bankers, street-sweepers, merchants, lamplighters, coopers, clergymen, and lawyers.[1] During the past generation the American high school has extended its influence until, in the mid-western states, it now attracts and enrolls about one-third of the adolescent boys and girls. The leaders who have thus extended the reach of the high school have concerned themselves not only with enrolling larger and larger numbers of pupils in their schools, but also with enrolling adolescents from all population groups.

It has become the avowed hope of many leaders, that the extension of secondary education to all population groups will open new vistas to hitherto uneducated groups and also

[1] Cf. the letters of early New England principals, quoted in Uhl, *op. cit.*, pp. 77–79.

develop specific knowledges, attitudes, and skills which are needed by certain vocational groups. The attainment of this high purpose seemed imminent until Counts showed by his high-school population study that, although the secondary school was growing rapidly, it was greatly extending itself horizontally, but was developing hardly at all vertically.[1] That is, he found by studying the enrollments of four large urban communities that the high schools in their midst, although large and growing institutions, were drawing relatively few pupils from certain occupational groups; this he found even when he disregarded the proportion of adults engaged in these occupations in the general population of these four communities; when, however, he considered the percentage of persons engaged in these occupations, he found that the enrollments from certain groups shrank to even negligible percentages. Counts's research emphasized the strong influence of occupational status upon persistence in school, and showed that the occupational status rather than the numerical size of different groups was the determining element in school attendance. Those findings have an obvious relationship to curricula planning.

As a part of a high-school curriculum investigation which has recently been conducted in Wisconsin, it was, therefore, desirable to canvass the high-school population. Three purposes prompted this canvass: (1) that of discovering the attractiveness of the present curricula; (2) that of finding out what subjects to offer in high schools; and (3) that of determining what emphases should be made within each subject.

Accordingly, the occupational status of 19,687 high-school pupils enrolled in 102 high schools in the year 1923–

[1] Counts, G. S. *The Selective Character of American Secondary Education.* Supplementary Educational Monographs, No. 19. University of Chicago, 1922.

1924 was obtained.[1] These pupils were selected for this investigation in the belief that they were representative of the state in sizes of schools, sizes of communities, geographical locations, and relations to the political districts of Wisconsin. A standard occupational classification, that used in census reports, was employed in tabulating the returns from pupils. In order to study the schools of different types, the schools were divided according to size into five groups:

Group I	Less than 100 pupils
Group II	100–199 pupils
Group III	200–499 pupils
Group IV	500–999 pupils
Group V	1000 or more pupils

The presence of one important element which influences only larger schools was known in advance. That is, the representation in Groups IV and V is affected by the presence of vocational schools within their respective cities and by the state law which compels adolescents either to attend a high school or, if employed, to attend a vocational school one-half time until the age of sixteen. Between the ages of sixteen and eighteen they must also, if employed, attend a vocational school ten hours per week. It is believed by observers of the situation that many parents view the high school as a more desirable institution for their own children than the vocational school; they send their children, therefore, to the high school in order to avoid the alternate compulsory requirement of having them attend the vocational school one-half time. Whether or not this belief is true, the vocational schools which exist in all cities whose populations exceed five thousand enroll a high percentage of the

[1] For a more complete report upon this investigation, see Uhl, *op. cit.*, pp. 215–219.

adolescents of these cities. In cities of less than five thousand inhabitants, pupils are not required by law to attend school after they are fourteen years of age. It can, therefore, be expected that schools of less than five hundred pupils which are representative of smaller communities will show the extent to which occupations are represented in regular secondary schools. Schools of more than five hundred pupils are located in cities which have also vocational schools. From these larger schools 26,000 pupils have been attracted to a life divided between the vocational school and some sort of remunerative work. Large schools represent, therefore, the residue after certain vocational pupils have been drawn elsewhere, to attend school and to work while small schools represent the residue after certain adolescents have left school altogether.

Contrary to anticipations, no striking differences were found between the percentages of pupils from each occupation in the ninth grade and the percentages in the twelfth grade. Minor differences in this respect were found, but as they were not found to exist consistently in schools of different sizes they seemed to be negligible. So far as the program of studies is concerned, this fact probably indicates that the provisions for the pupils in the different school years are about equally attractive for children of different occupational backgrounds.

Striking differences were found between the pupils of different groups of schools. In the small schools, those of less than two hundred pupils, fifty-three per cent of the pupils are from farmers' homes, while only twenty per cent are from homes of commercial or professional men. Artisans' children constitute about ten per cent and common laborers' slightly less than that amount. Clearly, then, the small schools are farmers' schools. At the other extreme,

in the largest schools, commercial and professional homes yield fifty-three per cent of the pupils, while artisans form about twenty-five per cent and common labor again contributes slightly less than ten per cent. These schools are, therefore, predominantly the schools of the commercial and professional groups. While the small and the large schools each derive fifty-three per cent of their pupils from farms or from commerce and professions, respectively, their percentages from other groups are also considerable. In the schools of medium sizes, those of two hundred to one thousand pupils, the commercial and professional groups again have the largest representation, although the agricultural and artisan groups contain about twenty per cent. The parents of about ten per cent of the pupils in all the schools are common laborers. If then the schools of Wisconsin are to be described in terms of their greatest occupational representations, the small schools can be described as agriculturists' schools, the largest schools as commercial and professional workers' schools, and the medium-sized schools as drawing heavily from four occupational groups which are, in descending order of frequency: commercial and professional, agricultural, artisan, and common labor.

Now if it is true that reciprocal relations should exist between each school and its community, one may argue that a fair percentage of children should be educated to engage successfully in the occupations of their own localities. As soon as this principle is accepted, it becomes necessary to find out what are the duties and traits of successful workers in each of the major occupations of the schools of these different communities. Next, it becomes necessary to organize adequately instructional materials for these duties and traits and see that they are properly administered. This principle of reciprocal relationship between school and

community requires differentiation of programs for city and village unless it be found that one program is as appropriate for prospective farmers as for prospective commercial workers. The acceptance of this principle does not preclude the offering of a cosmopolitan program of studies in a small high school. It does, however, emphasize the need of giving first importance to a curriculum which is most vital for the community in question. If, for example, over one-half the pupils in forty schools have been reared on farms, one may rightfully expect that the high school will bend every effort to offer a program which will cultivate the duties and traits previously found to be important on farms. Likewise, if over one-half the pupils in large centers come from homes of commercial and professional workers, one may expect the high school to offer the groundwork for the extensive training required for performing commercial and professional duties and acquiring the necessary traits for those occupations.

The discussion of a program of studies with reference to the future activities of pupils is always open to disturbing questions which cannot be satisfactorily answered. Planning the content of courses with reference to activities with which pupils are already familiar is less uncertain. In communities which are so predominantly agricultural that over one-half the high-school pupils come from farms, there seems to be little question that the basic arts and sciences should be skilfully approached from the agriculturist's point of view and applied to situations which arise in rural life. Other approaches and applications there may be, but these are essential. Again, when as many as one-fourth of the pupils of a school represent the artisans' group, the activities of artisans should be canvassed to find out their character, and then the items which are related to the basic

arts and sciences should be made clear to the teachers and incorporated into the program of studies. Furthermore, if it is found that the pupils who come from certain occupational backgrounds are especially proficient or deficient in any particular element, that element, if important, should be considered in the development of programs of study.

Appropriate curricula as a means of reciprocation among schools and communities. This chapter has cited many kinds of knowledge about communities — types which enable educators to devise and apply apt criteria to their schools and curricula. In the discussion of types of communities, emphasis has been placed upon many resemblances as well as many variations among different localities. While the variations are always significant in showing points of departure, items to be emphasized, and possible applications to be made in teaching, they are often underlain by resemblances which warrant a considerable uniformity of curricula in diverse localities. Within a single school, there may be, owing to the heterogeneous populations of most schools, quite as great needs for varying curricular emphases as among schools in widely separated localities. The need for reciprocal relations between the school and the community requires that the schools adapt curricular activities to local needs, whether these needs are relatively simple or composite.

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CHAPTER XV

THE SCHOOL PLANT AND THE CURRICULA

Curricular aspects of the school plant. Three aspects of the school plant determine largely its success. These aspects are: (1) the instructional staff, (2) the school buildings and grounds, and (3) the plan of the school — its philosophy and organization.

Failure of a community to make adequate provisions for these three elements of successful educational institutions will lead to the educational bankruptcy of the institutions themselves. A school is like a bank. To the sound banking institution the parents of a community are glad to entrust their savings. But no person whose prudence is highly esteemed will entrust his savings to a bank whose officers are of doubtful sagacity, whose building is in decay, or whose philosophy and organization are antiquated and cumbersome. To entrust funds to such an institution would lead neither to the strengthening of one's personal credit nor to flexibility of resources, but instead to a depreciation of the amount originally deposited. Likewise, the intelligent parents of a community entrust their children to the school. But no parent whose wisdom is respected will entrust his children to a school whose instructional staff is of questionable skill, whose building is ill planned, or whose philosophy and organization are irrational and weak; to entrust children to such an institution would lead neither to desirable increase in information, nor to skill in processes of learning,

but instead to a dwarfing of the original capacities of the children entrusted to it — "Lord God," exclaims Elyot in *The Boke Called the Governour*, "how many good and clean wits be now-a-days perished by ignorant schoolmasters." No school which is educationally unsound can either practice superior methods of instruction or provide adequate subject matter. Only for purposes of discussion and never in actual practice can method and subject matter be separated. Ill-equipped schools can no more offer adequate curricula than an unsound bank can offer security to its depositors.

Teachers and curricula. Each subject of the program of studies has been systematically organized. The objectives of all subjects have been charted. Curriculum committees and authors of textbooks have attempted to organize the content of all subjects so that they can be effectively presented by teachers. Indeed, authors, in planning books, often display almost as much concern about the instructional staff as about the pupils.

What is the result of such curriculum planning? Do teachers understand the organization of the subjects which they teach? Do they possess clearly defined and correct objectives? Do they know that they are *ex officio* members of curriculum committees? Evidences are at hand to show clearly that teachers have grasped the purposes of their subjects, that they have adequate knowledge of content, and that they are constant contributors to the curriculum. Many persons hold teaching positions without meeting the foregoing qualifications, but those persons are not teachers of the subjects of which they are in charge. Instead, they are irresponsible clerks; their misdirected efforts find no justification in intelligent curriculum planning or administering. This section of the present chapter is,

however, devoted to teachers and not to specious charlatans or feeble mountebanks.

As the selection and organization of the content of all high-school subjects has been questioned during the last decade, it is natural that many teachers should have attempted to enrich and make readjustments of content according to their pupils and localities. Such teachers have been impelled by ideals common to the leaders of their group. Examples of teacher enrichment of curricula will be reviewed in the following paragraphs.

1. *Teacher enrichment of English literature.* The National Council of Teachers of English set forth in 1917 an account of the aims and content of desirable courses in English composition and literature. Since that time the aims then set up have been reiterated. Among the aims of courses in literature is the development of ability to read books thoughtfully and with appreciation. This includes:

(*a*) Ability to find pleasure in reading books by the better authors, both standard and contemporary, with an increasing knowledge of such books and increasing ability to distinguish what is really good from what is trivial and weak.

(*b*) Knowledge of a few of the greatest authors, their lives, their chief works, and the reasons for their importance in their own age and in ours.

(*c*) Understanding of the leading features in structure and style of the main literary types, such as novels, dramas, essays, lyric poems.

(*d*) Skill in the following three kinds of reading and knowledge of when to use each:

(1) Cursory reading, to cover a great deal of ground, getting quickly at essentials.

(2) Careful reading, to master the book, with exact understanding of its meaning and implications.

(3) Consultation, to trace quickly and accurately a particular fact by means of indexes, guides, and reference books.

(*e*) The habit of weighing, line by line, passages of especial significance, while reading other parts of the book but once.

(*f*) The power to enter imaginatively into the thoughts of an author, interpreting his meaning in the light of one's own experience, and to show, perhaps by selecting passages and reading them aloud, that the book is a source of intellectual enjoyment.[1]

The meaning of these objectives as interpreted by Miss McCoy is illustrated in an account of her work with six sections of junior and senior pupils in English, including approximately one hundred fifty pupils. Four of the sections were in classics, one in drama, and one in contemporary literature.

The instruction in these classes was individual; a class of twenty-nine or thirty was not considered too large for individual instruction. The method of procedure was much the same in all of the classes. . . . A few of the basic principles (of the procedures), however, may be stated to make clear the evidence which follows. When a new type of literature was first taken up, it was always introduced by the instructor, sometimes by intensive work with the class, sometimes by reading aloud. Several days of exploration were allowed before any assignment was made. The assignments covered long periods of time and were made by the pupils themselves with the instructor's aid. For instance, the instructor announced that there would be a floor talk or report on something of interest arising from the classroom study then in progress. He sketched a few possible subjects with suggestions for developing them, but he made clear to the class that a subject of the pupil's own choice was far better than any suggested to him. There were always a few pupils who had to be helped in the discovery of a topic; but, after several months of training by the laboratory method, the number of such students was not large.

The laboratory method as used in the University High School is differentiated from the recitation method in the following ways:

[1] Hosic, James Fleming (Chairman). *Reorganization of English in Secondary Schools.* United States Bureau of Education, *Bulletin,* 1917, No. 2. Pp. 31–32.

(1) There is a classroom full of books — real literature, not reference books — made easy of access to the pupil in order that reading habits can be formed through a library situation. (2) There is no daily recitation. The classroom is a workshop where many kinds of activities may be seen at the same time, where the individuals are interested in their own problems, and where the instructor is essentially an assistant to these individuals. (3) There is no specific amount of content to be covered. The quantity of literature read does not matter in the least. The minimal requirement for each pupil is only as much as will give him the power of appreciation and independence of thought which the instructor has in mind as the objective of the course. (4) There are no marks given and no formal tests applied to measure achievement. The individual's behavior is under constant observation of the instructor, who is interested not in classifying him but in discovering all evidence of initiative, or appreciation, and of general growth in capacity for enjoyment. The material submitted in the following paragraphs makes clear the value of such evidence.[1]

After describing the handwork and dramatization which developed in these classes, Miss McCoy continues:

Much more common than the handwork and dramatization was the creative writing which sprang up in the class. This writing covered a wide range, both in the type of thing done and in the quality of the work. Excerpts from the work will do more than mere description to show the extent of appreciation it proves. Among the Classics groups during the study of the epic, there were written two original epics, a libretto for an opera based on *The Odyssey*, and five original plays. The joint project of two girls was an epic called, "The Maid of Orleans." It was twelve typewritten pages of poetry in which the story of Joan of Arc was told under the following divisions: "The Vision," "Orleans," "The Betrayal," and "The Martyrdom." The greater part of this epic was written in class. The other epic was based on the life of

[1] McCoy, Martha Jane, "The Voluntary Project as a Measure of Appreciation in Third and Fourth-Year English," *Studies in Secondary Education, II, Supplementary Educational Monographs*, No. 26. Department of Education, University of Chicago, 1925. Pp. 71–72.

Buddha. The following excerpt from the last named, which is only the introduction of the poem, will speak for itself:

Tow'ring over the rice fields, the giant Himalaya mountains
Shaded a fair mango grove, filled with the perfume of blossoms
Wafted along by the breeze that robbed the buds of their fragrance.
Here, in the shade of the mangoes, Maya, the wife of the rajah,
Bore an heir to her husband, to Suddhodana, the chieftain.
Sages from far and wide, foretelling events by their magic,
Vowed that in years to come, the child whom they called Siddhartha,
Just as the lotus flower, rising over the water,
Pure and perfect remains, though the place of its birth be sullied,
So would he live undefiled by the greed and the lust that surround him.
Many a year had rolled by since the birth of the young prince, Siddhartha.
Spring once more smiled o'er the land, and the air was sweet with the jasmine,
Full of the fragrance of spring and the languorous murmur of flowers,
Rustling and sighing of leaves and the humming of bees in the distance.
Fairer than spring in his manhood, was young Siddhartha Gautama.
Tall of stature was he, but slender and lithe as a sapling,
First in prowess he stood, defeating ev'ry opponent,
Surpassing his teachers in skill, and foremost of all in his knowledge.

A more remarkable poem, because of its scope, is the libretto based on *The Odyssey*. The poetry is not as beautiful, but the entire conception is more unusual. This libretto of sixty typewritten pages was the work of two girls. Much of the poetry was written in class, although some of it was done at home. In order to show

the care with which this long poem was worked out, two scenes, at least, are necessary. The following is an exact copy of the work as it was presented to the instructor:

ACT I

Scene 2. House of Circe

(*Pigsties are upstage. A banquet hall is set against the window on the left. A fountain with statuary in the middle occupies center stage. Tapestries and silks drape the walls. When the curtain rises, Circe is seated downstage left, singing softly to the accompaniment of her harp. Sunlight streaming through the window falls directly on her and the harp.*)

Circe. Thus fares it with unlucky voyagers
Who near my isle, and, passing, stop awhile,
And ask for something to refresh themselves.
They'll ne'er return unto their native land,
These heedless travelers, these luckless men,
For I have them securely in my power,
And under lock and key, bewitched as swine.
Innocent men, wearied, they entered here
Hungry and asking me for food and drink.
I gave it to them, but therein I put
A charm that made them lose their memories,
And changed them all into the form of swine,
But left their reason sound as 'twas before.
Weeping, they all besought me piteously
To let them go again — but I did not.
I care not for the tears of mortal men,
Nay, for a sea of tears I'd not give way.

(*There is a knock at the door.*)

But hark! Who knocks? Perchance another victim
Whom I may metamorphose like the rest. (*Goes to door.*)

(*Enter Odysseus.*)

Circe. Welcome, fair stranger! What is your desire?
(*Aside*) Aha! Another victim for my power![1]

[1] And so on for nine more pages. See *op cit.*, pp. 78–86.

In concluding her account of this work, Miss McCoy states that she has evidences in numerous other projects which show that superior work was accomplished by many members of the classes. Some of these are described in the following paragraph:

> In addition to these voluntary projects representing, as they do, hours of work, there were many research projects. These were of two classes — collections of poetry and of illustrations for literature and detailed analytical study of the classics. In the Contemporary Literature class, two pupils compiled anthologies of verse of the current year which in selection and variety rivaled any on the market. In the Classics groups two boys secured Gustave Doré's illustrations of Dante's *Inferno* and based a fifty-minute lecture on them with the aid of the reflectoscope. One of the girls collected all of the picture postcards she could find about incidents in the life of Joan of Arc and showed them to the class in the reflectoscope. There were many oral and written reports of a research type worthy of college students. The outstanding ones were "*The Song of Roland* in the Original French Contrasted with Its English Translation" and "*The Commedia del Arte* and Its Influence on Current One-Act Plays." Others worthy of mention were "The Faust Theme in All Its Various Forms," "The Debt Alfred Noyes Owes Shakespeare in the Creation of His Fairies," "A Study of Guinevere as William Morris and Tennyson Saw Her," and "The Epic Qualities in the Long Poems of John Masefield, Alfred Noyes, and J. G. Neihardt."
>
> The present writer, in the collection of her material, has been careful not to cite the work of a small group of gifted pupils but to make the report representative of the whole.[1]

Assuming that voluntary projects constitute a more reliable indication of appreciation of and interest in literature than does the ability to pass such conventional examinations as those planned by the clerks who are in charge of many

[1] *Ibid.*, pp. 87–88.

classes, this report shows a marked advance in the method and the content of literature courses.[1]

2. *Teaching English usage.* The bulletin referred to above in connection with the aims of literature courses sets forth also the aims of classes in expression. These aims include the ability to speak and write correctly and with due observance of unity and order.[2] Miss Shepherd finds, however, that conventional courses in English do not succeed even in eliminating certain "errors of grammatical usage in the speech and writing of high school pupils." [3] Miss Shepherd's plan for overcoming these difficulties was as follows:

> The teaching unit consisted in a statement and illustration of the principle which was violated in a specific error. This class was shown the need for the corrective lesson, and the principle which had been violated was stated and explained. Assimilative exercises in using the principle were then given in order to concentrate attention on it and to fix and clarify the understanding of it. Teaching tests assured the instructor of the pupils' mastery of the lesson. Finally, application of the information in ordinary situations of the classroom requiring speech and writing measured the ultimate success or failure of the teaching.
>
> The body of principles or lessons to be taught was arrived at by four years of systematic effort to discover exactly what errors are made by pupils of the seventh, eighth, and ninth grades. For this purpose a careful record was kept. The actual sentences in which the errors occurred were written on slips of paper and kept in a card file. No attempt was made to record the number of cases of a given error, the aim being rather to secure abundant samples of all of the different kinds of errors made. Hundreds of sentences exemplifying these errors were collected, analyzed, classified, and organized into blocks of related lessons.

[1] Further information about the amounts of work accomplished is given in the original article.

[2] *Op. cit.*, p. 31.

[3] Shepherd, Edith E., in *Studies in Secondary Education, II.* Page 91.

The writer's experience in gathering this material offers some interesting side-lights on the teaching problem. The first significant fact which appeared was that certain errors — such as running sentences together without periods or capitals, writing certain kinds of subordinate elements as complete sentences, and omitting all punctuation within sentences — were general with every class and common to the classes of successive years, while some classes were especially addicted to certain errors and not to others. One year the outstanding error made by the pupils in the sub-freshman class was the shifting of tenses in the course of a narrative. In the class of the following year this error was negligible, but many pupils used the possessive in very awkward ways. ("If one parent dies, the other has to do both's work." "One of the girl's aunt.")

Among the errors common to the classes of four successive years, that is, among the errors which appeared constantly in almost every set of papers on whatever subject, the following are the chief: run-on and fragmentary sentences (due to lack of "sentence sense"); excessive use of "and" between sentences; misuse or omission of capitals and apostrophe; lack of agreement between subject and verb or between pronoun and antecedent, or lack of logical agreement between parts of sentences; failure to use punctuation within sentences.[1]

In the freshman class the purposes of the study, specifically stated, were: (1) to discover the accuracy with which pupils use certain items of punctuation within the sentence before and after teaching, as a means of measuring the extent to which the formal teaching of the principles carried over into regular written work; (2) to discover the relative transfer in written work done in the science class and that done in the English class; (3) to analyze some individual cases to discover probable causes of the results found.

Certain items of punctuation within the sentence were chosen for study, in preference to other matters of usage, because opportunities for punctuation are comparatively abundant in all written work and vary little with the content. Moreover, most Freshmen have previously received little or no specific teaching on this point (no pupil in the class studied was able to state or illustrate clearly a single rule for using punctuation within the

[1] *Op. cit.*, pp. 91–92.

sentence), and the majority of them neglect it to a very large extent. Finally, the lessons in punctuation were the first ones taught to the class, and consequently there was longer time to study the results of the teaching than in the case of other items.

The particular items of punctuation chosen for study were the following: the colon after a word, phrase, or sentence forming an introduction to that which follows; the semicolon between the clauses of a compound sentence not connected by a pure conjunction; the comma to separate clauses of a compound joined by a pure conjunction; the comma to set off an adverbial clause preceding the main clause or loosely connected with it; the comma to separate words, phrases, or clauses in a series; the comma to set off many introductory expressions, especially those containing verb forms; the comma to set off parenthetical expressions; the apostrophe for possession.[1]

Before instruction three pupils punctuated with 50 or more per cent accuracy. Before instruction twelve pupils punctuated with 25 or less per cent accuracy. After instruction there were no pupils who punctuated with 25 or less per cent accuracy. After instruction eleven pupils punctuated with 50 or more per cent accuracy; of these, five pupils punctuated with 75 or more per cent accuracy.[2]

3. *The enrichment of community civics.* Kimmel reports upon the enrichment of community civics as pursued by a class of twenty-five eighth- and ninth-grade pupils.[3] The course was organized into five units: immigration, protection, recreation and civic beauty, the handicapped, and industry. As one of the aims of the course was to develop in the pupils habits of extensive and purposeful reading of good books, there was an attempt to find out the numbers of books and magazines read both with the suggestion of instructors and those read without such suggestions.

The pupils were not required to do any specified amount of reading as expressed in terms of pages. At the beginning of the

[1] *Ibid.*, pp. 98–99.
[2] *Ibid.*, p. 100.
[3] *Studies in Secondary Education, II.* Pp. 33–69.

course when the matter of reading books in connection with the course was explained, the pupils were asked to read one-half hour each school day from the books included in the book-lists. Reasons for this requirement were presented, and the benefits of the wide reading in writing themes and giving floor-talks was emphasized. Every member of the class had one class period each day in the library, and this reading could be done in the library, or the books could be withdrawn from the library for use outside of school hours. Finally, the pupils were asked to read books from all of the book-lists rather than to center their reading on certain types of literature. Aside from these few requirements, all pupils were free to read when they chose and as much as they found time and inclination to read.

Amount of extensive reading done during the course. — The amount of reading done by pupils in any class varies widely, depending on (1) the reading rate of the individual pupil, (2) his intellectual interests, (3) the range of his interests other than intellectual interests, and (4) his home environment. The maximum amount read by any one pupil during the course was 6,337 pages, while the minimum number of pages read by any one pupil was 2,284. The amount of extensive reading completed varied widely for the different units. The maximum aggregate amount read on any one unit by the class was 30,391 pages, or an average of 1,216 pages per pupil. This unit was "Protection." The minimum aggregate amount on any one unit by the class was 20,503 pages, or an average of 820 pages per pupil. This unit was "Immigration." The relatively small amount read on this unit may be accounted for as follows: (1) the pupils had not yet become accustomed to the routine details of the course which kept them from reading from the book-lists; (2) sufficient interest in the book-lists had not yet been created; (3) this unit did not hold the interest of the pupils as the other units; and (4) there was a large amount of absence due to illness during the time spent in the study of this unit, with a resulting decrease in the amount of extensive reading.

A comparison of the amount of extensive reading done by the group of pupils under investigation with similar data from other classes is presented in Table XXII. The pupils in this class ranked slightly lower than the other directly comparable groups. When

the amount read by the pupils in this class is compared with the amount read by all other classes for which data are available, as shown in Table XXII, it is seen that the average number of pages read by this class is lower than the average number of pages read by all other classes and that the median number of pages read by this class is lower than the median number of pages read by all other classes except one.

TABLE XXII

COMPARATIVE DATA ON NUMBER OF PAGES OF EXTENSIVE READING COMPLETED BY PUPILS IN COMMUNITY LIFE ENGLISH CLASSES

	AVERAGE NUMBER OF PAGES	MEDIAN NUMBER OF PAGES	HIGHEST NUMBER OF PAGES	LOWEST NUMBER OF PAGES
II, second semester:				
Freshmen (eighth grade)*	4,118	4,062	6,337	2,284
Freshmen (eighth grade)	4,260	4,285	11,596	1,711
Freshmen (ninth grade)	4,641	3,900	8,627	2,182
II, first semester:				
Sophomores (tenth grade)	4,936	5,142	7,879	1,647
Sophomores (tenth grade)	4,712	4,250	9,448	2,308
I, first semester:				
Freshmen (ninth grade)	4,764	5,166	7,166	1,969
Freshmen (ninth grade)	6,641	5,833	14,240	2,710

* Section used in investigation.

In addition to the books read as a part of the work of the course, the pupils in this class were asked to keep a record of any other books which they read. This record was to cover those books which were not included in any book-lists of other courses in which the pupils were enrolled during the semester. The pupils read a total of 287 books in addition to the reading done as a part of the work of the other courses which they were taking during the semester. The number of books varied widely. In general, the pupils who read the largest number of books as recorded in this list also read the largest number of books from the extensive reading lists. Although the number of pupils is too small to furnish an adequate basis for generalization, this fact seems to indicate that pupils who read widely from book-lists will be prompted to read other books not included in the lists. Again, these book-lists

seem to contain those types of books which pupils like to read, because if this were not true, one would expect to find those who have not read many of the books in the regular book-lists reading a large number of other books. The boy who read fifty-two books also read a total of 4,579 pages from the book-lists, and he was one of the most capable pupils in the class.[1]

In addition to this reading, the pupils of these classes read extensively in nineteen magazines.

Kimmel's conclusions were that extensive reading of "related types of worth-while literature is an essential factor in the orientation of the pupil, since it provides him with a vicarious experience." He found also that the social science content of the regular civics course when combined with extensive reading provides a large and measurable amount of material which can be correlated with English in the preparation of forceful and well-rounded themes and floor talks.

4. *The enrichment of general science.* After finding that teachers of general science are nearly unanimous in agreeing that extensive reading is valuable in the study of that subject, Curtis set himself the task of demonstrating this value.[2] He selected books which were in conformity with the interests of children, and then annotated the books in such a way as to show pupils the general characteristics of the books if they read independently. In the case of a portion of the pupils whom he investigated, he discussed the materials informally. Finally, he measured the results of the extensive reading by means of tests.

Curtis's conclusions were that extensive reading has value far greater than that indicated by present-day employment of it. He found that the value of such reading was measurable in terms of increased interest in general science, greater

[1] *Op. cit.*, pp. 53–55 and p. 57.

[2] Curtis, F. D. *Some Values Derived from Extensive Reading of General Science.* Columbia University, 1924.

general scientific knowledge, and the development of scientific attitudes. In conformity with these conclusions, he recommended:

1. As much stress as possible should be placed upon voluntary extensive reading of scientific literature in connection with all courses in general science.
2. In building up a library of scientific books for extensive reading, pupil choice and approval should be made an important criterion in the selection.
3. The small amount of time needed to give instruction and training in scientific attitudes and in the ability to analyze newspaper science should be devoted to those purposes as an essential part of the course.[1]

5. *Improving efficiency and economizing time in mathematics.* In 1916–1918, Rugg and Clark organized a ninth-grade mathematics course in such a way as to save one month's time on a single topic of algebra.[2] This topic, factoring, was taught in two different ways by the investigators. Four classes were taught factoring in the usual manner, that is, "case" by "case," about six weeks being spent on the "cases." Two other classes were taught in six lessons all the algebra the pupils needed for special products and factoring, except "the sum and differences of two cubes." Tests which were given in all six classes convinced the investigators that the pupils who had been taught factoring for only six days by an improved procedure were better fitted in factoring and for mathematics in general than were the four classes which had been taught by the traditional procedure. It was, therefore, proposed that useless work in factoring be eliminated and that defensible content be substituted therefor.

[1] *Ibid.*, p. 112.
[2] Rugg, H. O., and Clark, J. R. *Scientific Method in the Reconstruction of Ninth-Grade Mathematics.* University of Chicago, 1918.

It is not the purpose of this section to present a critical study of the methods which are incidentally mentioned in the foregoing reviews of curriculum procedure. The purpose is only to cite certain cases in which the content of courses offered by progressive teachers differs markedly from that which is usually offered in conventional courses. There seems to be little ground for doubting the advisability of suggesting that all teachers make equally valuable additions to or substitutes for conventional subject matter. If such variations from custom in the selection and organization of subject matter are desirable, then it can be said that such innovators as the teachers whose works are under review are providing valuable content which has never been taught by any save superior teachers and which has yet to be discovered by the average teacher. In brief, the teacher largely determines what shall be taught; many self-styled teachers know little and, therefore, teach little, while the real teacher understands much and aids pupils to see the real meanings of the curriculum. An additional point of great importance is this: when one discusses the values of subjects, the discussions may be in terms of the content presented by an inferior teacher or in terms of that presented by a superior teacher. The two cases are very different; Latin, English, or general science may have value if taught by one teacher or they may be almost without value if taught by another; that is, the content in the two cases may be quite different.

Evidences which are entirely different from these just cited might be used to show that the actual content of subjects is largely dependent upon the teacher. The amount of interest, reaction, and appreciation developed by a teacher is also an indication of the amount of the real curriculum that has been assimilated. As examples, two teachers were recently observed while they were guiding

their foreign-born pupils in the study of Bret Harte's *The Luck of Roaring Camp* and Bacon's *Essays*, respectively. Despite the fact that the pupils if left to themselves would probably have read Harte's story and burned Bacon's *Essays*, the class interest actually observed would lead one to suppose that Bacon wrote gripping essays for our age, and that Harte was probably a pedantic writer who droned out inane tales merely to fill magazine columns. That is, one of those teachers taught the relatively dry and difficult *Essays* so well that her results outshone those of her stupid colleague, who belabored an easy and interesting tale so soundly as quite to efface its intrinsic charm. The reader of these lines must have encountered teachers of equally different characteristics — teachers who could charm, inspire, and direct and other teachers who could taint, deaden, and mislead. Under the guidance of the latter, only the strongest pupils can succeed; with the leadership of the former, few can utterly fail. In curriculum construction, therefore, let America look to her teachers and remember that these classroom pilots play a part fully as important as that of national committees.

The physical equipment of schools and their curricula. Although it has been often asserted that a log with a famous teacher on one end of it and an apt pupil on the other end constitutes an excellent institution of learning, one may properly ask, first, whether this assertion was intended as literal truth, and second, whether Garfield believed that replicas of Mark Hopkins were numerous. Regardless of the opinion of the past generation, about this matter, the present-day student of school buildings is convinced that even a Mark Hopkins can produce better results in a well-equipped, modern building than in the average nineteenth-century schoolhouse. This section will consider the reasons

for the modern student's convictions about school buildings and their equipment.

1. *School sites and curricula.* Insofar as such neighborhood conditions as those treated in Chapter XIV can influence curricula, the location of a school site is relevant to the present discussion. In the first place, the distance from the school to the remotest neighborhoods which it is intended to serve must not be so excessive as to restrict attendance. The findings of Judd[1] indicate that if different types of high schools are provided for different types of urban neighborhoods most children will attend the nearest school, whether it be chiefly a technical, a commercial, or a college preparatory school and regardless of the pupil's individual preferences for curricula. This tendency of children to attend the nearest school has led to the recommendation that cosmopolitan rather than special types of schools be developed in cities. If this recommendation is followed, there is need for population studies which reveal three types of population facts: the degree of concentration of population within the high school area, the growth tendencies of the population, and the characteristics of the population areas. Such information aids in indicating the desirable size of the site and the emphasis to be placed upon different curricula.

In the second place, the school site should be chosen with due regard to classroom conditions. Certain schools, as the Polytechnic High School of San Francisco, are unable to render just opportunities to children because their sites have not been wisely selected. The actual curricular opportunities of this school are thus restricted by conditions which might readily have been avoided.

[1] Judd, C. H. *Measuring the Work of the Public Schools.* The Survey Committee of the Cleveland Foundation, 1916. Pp. 228ff.

It would have been better in almost every particular to place the recitation or class rooms of this building on the upper side of the slope, away from the noise of the street cars, and if need be to put the shops near the noise on the lower side. This would have saved endless difficulties with noise and dust and also made it easier to install the heating plant. The building might not have made as impressive an appearance thus arranged, but appearance is secondary to usefulness. As it now is, the part of the building most used is in the worst place.[1]

In the third place, the efforts of school boards to obtain central sites have affected grievously the services which can be rendered by different departments and especially by the department of health education. If the work of this department is intended to include the activities recommended by experts, the junior high school site should cover nearly seven acres.[2] For senior high schools, the site should, according to Donovan, be about twice the size of that for junior high schools. "Cities keeping step with progress in education," he says,

are providing high school sites containing twenty-five acres. Experimental gardens alone will require from three to five acres. The trade and industrial shops of the industrial arts department are generally planned to occupy separate buildings set some distance from other departments which require quietness. The gymnasium, closely allied with the athletic field, should also be in a separate building. The same is somewhat true of the music department with all its accompanying noises. It is also necessary that the girls should have a separate athletic field from that of the boys, as a great deal of the physical training, now compulsory, will be done in the open air. Therefore, in order to meet the

[1] United States Bureau of Education, *Bulletin*, 1917, No. 46. Page 165.

[2] This estimate is based upon the amount of space required for a running track, baseball diamonds or a football field, tennis courts, courts for basket ball, handball, and volley ball, besides spaces for indoor athletic events. Cf. also Donovan, J. J. *School Architecture*. The Macmillan Company, 1921. Pp. 8–9.

many and diversified requirements of secondary education, large areas of ground for high schools are to-day as essential as large buildings.[1]

It is to be distinctly understood that the site upon which a school is erected in no way affects the possibility of offering any given subject, for physical education is frequently offered with no equipment save that found in ordinary classrooms; science has been offered in many schools which have no laboratories; and athletic programs have been launched where no open spaces were provided by the school. But this section is concerned, however, not with the mere offering of courses; instead, it is concerned with the provisions of physical equipment which will make effective offerings possible. When viewed in this light, the passage just quoted from Donovan has an unmistakable bearing upon curricula.

2. *The relation of plans and equipment of school buildings to the curricula.* In his book entitled *The School and Society*, John Dewey emphasized the relation of the plan of school buildings to the effectiveness of curricula.[2] He shows clearly that if the school building is to be occupied by a miniature society the building itself must contribute to the organic relation which should exist between departments. That is, the school building is regarded as an integral group of work rooms all of which are designed to enable pupils not simply to do things, but to get also the idea of what they do.

One of the most important integrating agencies is the work of the school library. To this room pupils come for answers to questions and for enjoyable literary experiences. The library should, therefore, be as accessible as possible to all pupils, and freedom to use the library is now regarded

[1] *Op. cit.*, p. 9. [2] Chapter III.

of "such importance to the school plant that it might be stated as an educational axiom that the prospective value of the student to the state, society in general, and to himself, is largely dependent upon his regard for the library and his ability to make the fullest possible intelligent use of it." [1] In order to be of greatest service, the "library should be centrally located, so that it may be conveniently and quickly reached by the students from the departments whose use of the room is greatest. Consequently, it should be nearest to the rooms assigned to academic studies, such as history, English, literature, civics, and the sciences." [2]

Certain subjects such as the sciences, household arts, industrial and mechanical arts, fine arts, commercial subjects, music, and health are recognized as demanding specialized classrooms for effective presentation. No one expects the effective teacher of science to be deprived of a specially constructed laboratory and classroom or the teacher of healthful living to be deprived of the capacious area needed for gymnastics and athletics. Likewise, the teacher of fine arts is recognized as making only a just demand when he asks for a properly lighted room equipped for the particular activities of art pupils. All the needs just implied and also analogous needs which might be cited for the other subjects named at the beginning of this paragraph are now readily granted. That is, if a school man acquaints himself with each of these subjects of study — the aims, content, methods — he finds that the aims of these subjects can be attained only with difficulty even if suitable building plans have been followed. To offer science without a laboratory, commercial subjects without office equipment, or art without suitable rooms with proper equipment would show one's willingness to waste a community's resources.

[1] Donovan, *op. cit.*, p. 291. [2] *Ibid.*, p. 292.

For inadequate provision of facilities would lead to waste and not to economy.

Other subjects have not fared so well at the hands of those who launch school building programs. English, civics, history, and mathematics, for example, can, it seems, be taught in any room which has four walls and an illumination of from six to twelve foot candles. If, however, the aims of teachers of literature be examined one finds that the aims include, first, leading

> the pupils through a fairly extensive field of worthy literary art, both classic and modern. This end is attained through general pupil-reading from the library tables in the classroom, guided by the pupils' own tastes and the sympathetic direction of the instructor. Second, an attempt is made to lead the pupils to an understanding and appreciation of representatives of each type of this literature through intensive study and interpretation by the instructor. This process is not simply an end in itself but also a key to fuller appreciation of other specimens of the same type read silently by the pupils. Instruction is not successful unless it supplies stimulation to such extensive reading. Third, an effort is made to lead the pupils to develop inductively for themselves standards of literary judgment which may serve as guides and stimuli to further individual reading on their own initiative; in a word, to intellectualize or rationalize standards of taste.[1]

If one reads these objectives aright, one concludes that many classrooms in which literature is discussed are singularly ill-fitted for such use. Indeed, the classroom described in the following lines, although unconventional in both lighting and equipment, is far better adapted to the attainment of the aims of teachers than is the average unspecialized classroom. In this hospitable, specialized classroom, boys

[1] Hanes, Ernest F. and McCoy, Martha Jane. "Organization and Technique of a Teaching Unit in English Classics," *Studies in Secondary Education, I.* University of Chicago, No. 24, 1923. Pp. 137–138.

have been led to understand and appreciate the most difficult form of literary expression, the essay. This room

is nearly thirty-five feet square, well lighted by groups of windows on three sides. These groups of windows have comfortable window-seats which tempt boys during their silent reading periods. About the library tables at the back of the room on which the book supplies are stacked, the twenty-four boys may be seated easily. Two semi-circles of chairs are grouped at the front of the room about the instructor's desk, arranged informally enough to permit the greatest freedom, yet formally enough to afford the instructor an opportunity to hold the attention of the class when necessary. The boys take these chairs when entering the room. As soon as the instructor asks them to do silent reading, they select a book from the table and find a comfortable place for work, either in a window-seat or at a table. Because of the convenience of this room, the instructor has been able to make use of a variety of procedures.[1]

Civics and history, no less than literature, can be most effectively pursued in specially fitted rooms. Maps and numerous books are the indispensable property of classrooms for these subjects. Mathematics, too, as organized in most modern textbooks requires special equipment only slightly less than the sciences do. While these subjects may not require the special consideration of the school architect, they must, nevertheless, be given special consideration by the successful supervisor. That is, the supervisor must acquaint himself with the objectives of each course and then provide equipment which will facilitate the attainment of these objectives. The present generation has witnessed the announcements of aims by many important national committees on curricula. Laymen as well as professional educators are disturbed by the discrepancies between objectives and actual attainments. It is here urged that supervisors

[1] *Ibid.*, p. 139.

provide specially planned and specially equipped classrooms as means for aiding teachers in the attainment of recognized objectives. The experience of Hanes and McCoy in literature teaching illustrates a quality of attainment that should be made common.

The general plan of the school and its curricula. Secondary schools are organized as cosmopolitan or special and as six-year or four-year schools. In addition to these forms of general organization there are attempts in certain schools to correlate the work of different departments and to make special provisions for individual differences among pupils.

1. *Cosmopolitan or specialized schools.* The cosmopolitan or specialized form of organization is that in which all curricula are included in a unified organization. This form of organization, which is the standard type of secondary school in the United States, has an important relationship to the curricula. The following quotation from *Cardinal Principles of Secondary Education,* describes this and also discusses the limitations of special types of schools.

> Junior high schools must be of the comprehensive type, whatever policy may be adopted for the senior high schools, since one of the primary purposes of the junior high school is to assist the pupil through a wide variety of contacts and experiences to obtain a basis for intelligent choice of his educational and vocational career. In the judgment of the commission senior high schools and four-year high schools of the older organizations should, as a rule, be of the comprehensive type for the following reasons:
>
> 1. *For effectiveness of vocational education.* — When effectively organized and administered, the comprehensive high school can make differentiated education of greater value to the individual and to society, for such value depends largely upon the extent to which the individual pursues the curriculum best suited to his needs. This factor is of prime importance, although frequently ignored in discussion regarding the effectiveness of vocational and other types of differentiated education.

In a system of special type schools many influences interfere with the wise choice of curriculum. Thus many pupils choose the high school nearest to their homes, or the school to which their friends have gone or are going, or the school which provides the most attractive social life or has the best athletic teams. Still others are unwisely influenced by the notions of neighbors and friends of the family. After entering a special type school, many pupils drop out because the work is not adapted to their needs, while comparatively few transfer to another school.

In a comprehensive school the influences interfering with a wise choice of curriculum may be reduced to a minimum. When an unwise choice has been made the pupil may be greatly aided in discovering a curriculum better adapted to his needs because he can see other work in the school, talk with school companions, and confer with teachers who are able to give him expert advice regarding such curriculums. When such a pupil has found a curriculum better adapted to his needs, he can be transferred to it without severance of school relationships and, what seems to him, the sacrifice of school loyalty.

Moreover, pupils in comprehensive school have contacts valuable to them vocationally, since people in every vocation must be able to deal intelligently with those in other vocations, and employers and employees must be able to understand one another and recognize common interests. Similarly, teachers in comprehensive schools have a better opportunity to observe other curriculums and are thereby better able to advise pupils intelligently.

Summarizing under this head, the well-organized comprehensive school can make differentiated education of greater value than can the special-type school, because it aids in a wise choice of curriculum, assists in readjustments when such are desirable, and provided for wider contacts essential to true success in every vocation.

2. *For unification.* — When administered by a principal who himself recognizes the social value of all types of secondary education and inspires a broad spirit of democracy among teachers and pupils, the comprehensive high school is a better instrument for unification. Through friendships formed with pupils pursuing other curriculums and having vocational and educational goals

widely different from their own, the pupils realize that the interests which they hold in common with others are, after all, far more important than the differences that would tend to make them antagonistic to others. Through school assemblies and organizations they acquire common ideas. Through group activities they secure training in coöperation. Through loyalty to a school which includes many groups they are prepared for loyalty to State and Nation. In short, the comprehensive school is the prototype of a democracy in which various groups must have a degree of self-consciousness as groups and yet be federated into a large whole through the recognition of common interests and ideals. Life in such a school is a natural and valuable preparation for life in a democracy.

3. *For objectives other than vocation.* — A comprehensive high school can provide much more effectively for health education, education for the worthy use of leisure, and home-making education than a number of smaller special-type schools can.

The most effective health education requires adequate equipment and instructors competent to diagnose health needs and direct health activities. Expenses and difficulties of duplication of such facilities in every smaller special-type school are almost prohibitive. Preparation for the worthy use of leisure is best achieved when there is a wide variety of activities from which the pupils may select, such as arts and crafts clubs, literary and debating societies, and musical organizations. All of these require for their success enthusiastic leadership such as can best be secured from a large faculty. Girls in all curriculums should have the advantages of work in household arts under efficient directors and with adequate equipment. Such conditions are most readily provided in the comprehensive school where there is a strong department of household arts.

With the establishment of a special-type high school it frequently happens that various important phases of education are neglected or minimized in the other schools of that system.

4. *For accessibility.* — In cities large enough to require more than one high school it is desirable to have each school so located as to serve a particular section of the city, thereby reducing the expense and loss of time involved in travel on the part of pupils. The proximity of the school to the homes results also in greater

interest in education on the part of pupils and parents, and consequently increases the drawing and holding power of the school.

5. *Adaptation to local needs.* — In recommending the comprehensive high school as the standard secondary school the commission recognizes that in large cities where two or more high schools are needed it is not always possible to provide every curriculum in each high school, such a practice being precluded by the fact that certain curriculums would thereby enroll in the several schools too few pupils to permit economical organization and administration. In such cases a few curriculums may well appear in selected comprehensive schools or even in a single school only, while other curriculums appear in every school.

The commission also recognizes the impracticability of offering every curriculum in every small rural high school. In such cases it is desirable that a curriculum for which the number of pupils does not warrant such duplication should be offered in selected schools, and that pupils needing that curriculum should go to those schools. This plan is substantially the same as that recommended for the large city.

6. *Effective organization of curriculums in comprehensive high schools.* — Finally, the commission recognizes that in the past relatively ineffective instruction has been offered in some comprehensive schools. This has been due in part to the fact that everywhere vocational education has been passing and is still passing through a period of experimentation. The commission believes, however, that the most serious defect in vocational education in the comprehensive high school has been due to a lack of proper organization and administration. Effective vocational education can not be secured when administered like so many accidental groupings of subjects. To remedy this situation the committee recommends that each curriculum, or group of closely related curriculums, in the large comprehensive high school be placed under the supervision of a director whose task it shall be to organize that curriculum and maintain its efficiency. The curriculum directors must work under the general direction of the principal, who must be the coördinator of all the activities of the school. Especially is it necessary that each director shall be selected with the same care that would be exercised in choosing the principal of a special-type school enrolling as many pupils as are enrolled in the

curriculum or curriculums under his direction. In medium-sized high schools unable to employ directors for the various curriculums, the teachers should be organized into committees to consider the problems of the various curriculums, all working under the direction of the principal.

Unless the various curriculums are effectively organized and administered, and unless the democratic spirit pervades the school, the comprehensive high school is in danger of failure; with these factors present, it has every promise of success.[1]

2. *Reorganized or traditional administrative units.* The traditional four-year high school ordinarily follows an eight-year elementary school, thus forming an 8–4 system. In distinction from this is the reorganized form in which the elementary school and the high school are each six years in length, thus forming a 6–6 system. The 6–6 system provides a long period of secondary education and admits of long sequences of courses, of an exploratory period during Grades VII and VIII, and also of other advantages which will be discussed in Part V. It is, of course, clear that the six-year school can offer a much more extensive program of studies to pupils than is possible in the four-year high school. By offering a program which admits of elective courses as early as Grade VII and by offering courses which are designed to orient pupils for their later years of school, the six-year school makes special provisions for pupils' individual differences in equipment, interests, and needs.

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[1] United States Bureau of Education, *Bulletin* 1918, No. 35. Pp. 24–27.

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PART VI

PRESENT-DAY CURRICULA

CHAPTER XVI

THE RECONSTRUCTION OF CURRICULA

Typical characteristics of periods of reconstruction. Many agencies coöperate to generate periods of curriculum reconstruction, and such periods are usually of long duration. These periods are the offspring of eras of progress and are continuous during those eras. Indeed, difficulty is experienced in any attempt to determine the beginning or the end of such a period. Some of the most notable examples of reconstruction have been cited in Part I: the reconstruction of literary and mathematical studies during the Athenian Age; the systematization of curricula into the seven liberal arts; the early modern reconstruction in Vittorino's generation; and the seventeenth- and eighteenth-century expansion of academy curricula in Western Europe and America. Underlying each of these extensive periods, there have been formative eras. Vittorino's work was, for example, foreshadowed by the progress of thirteenth-century scholars. Likewise, the thirteenth-century attainments were, in turn, made possible by the scholarly pursuits of translators, clandestine scientists, philosophers, and teachers of the generations which immediately preceded that century.

The modern period of reconstruction exhibits both the general characteristics which typify such epochs; many agencies are participating in the reconstruction, and the period is one of continuous change within an extended formative era of progress. The operation of these agencies of reconstruction is not unlike the activity of an individual

whose mental life is one of progress. Such an individual, like other persons, performs many operations upon a relatively commonplace or habitual level. Certain of his habitual activities, however, conflict with or fall short of his scheme of thought and stimulate his alert mind to a realization and at times to a possible solution of the problems of his life. So an age of progress carries with it a vast amount of customary activity which is in part unsuited to changing and progressive living. This ill-adapted scheme of life incites the critic or the research student to raise and, if possible, solve the problem by reconstructing the modes of human life. Problems which have arisen in this manner are the direct product of contemporary progress and are the immediate cause of the reconstruction of secondary-school curricula. In this chapter ten of these problems which have arisen from modern criticism, research, and legislation will be discussed, and their effects upon the reconstruction of subjects and entire curricula indicated.

Problems which have led to the reconstruction of curricula. 1. *Systematization of programs of study.* Between the years 1750 and 1890 American secondary-school programs of study changed from a classical offering to a highly diversified offering. By 1890 many schools offered curricula which were not acceptable as fulfilling the admission requirements of colleges. Not only were certain subjects unacceptable, but also the subject matter of many recognized subjects was judged as inadequate by scholars. Hart found, for example, that in his own department of knowledge, American history, secondary-school courses were, in many cases, fragmentary and badly organized.[1] At about the same date Eliot judged the mathematical studies as no less inferior,

[1] Hart, A. B. *Studies in American Education.* Longmans, Green and Company, 1895.

because they were so organized that young children were compelled to solve difficult arithmetical puzzles without the assistance of simple algebra. Pupils were later exasperated when they discovered that the difficult problems of Colburn's *Sequel*, over which they had struggled for hours, might have been solved in as many minutes had they got half-way through Sherwin's *Algebra*. Eliot himself was exasperated at the "abominable waste of time and strength of children" by setting them at doing in a difficult way, never used in real life, many tasks which they could learn to do in an easy way a year or two later. He found geography equally culpable in this respect — details about a few localities were painfully memorized only to be forgotten soon, while other important localities were overlooked.[1]

A few years later, 1892, the National Council of Education examined the programs of about forty schools and found, first, that the total number of subjects taught in these was nearly forty, thirteen of which were found in only a few schools; second, that unprofitably short and fragmentary periods were devoted to these subjects; and, third, that excessive variation existed among schools in the time allotted to each subject. These discoveries applied to both old and new subjects, so that both Latin and algebra were very different quantitatively in different schools.[2] The work of the Committee of Ten in systematizing the programs of study has already been reviewed on pages 190 ff. As there stated, this committee and its successors led to so thorough a systematization of courses that the next generation found as one of its major tasks that of making fairly uniform programs of study more flexible. That systematization per-

[1] Eliot, C. W. in "Can School Programmes be Shortened and Enriched?" Reprinted in W. L. Uhl, *Principles of Secondary Education*, pp. 472–479.

[2] *Report of the Committee of Ten on Secondary Schools.* American Book Company, 1894, pp. 4–5.

formed the important service of placing the situation in a clear light for the extensive appraisal which took place later. By 1910, just prior to the appointment of the Committee on Economy of Time, well-organized secondary-school courses had been established in mathematics, science, English, foreign languages, and social studies. That is, the fragmentary courses of 1890 had been reconstructed and were established and ready for a new appraisal and reconstruction. Certain newcomers to the program, such as applied arts and home economics, had yet to be systematized. Owing to new developments which will be discussed presently, the problems of systematization and reconstruction had, however, become more difficult than they were in the nineteenth century.

2. *The extension of secondary education.* A second source of problems which have led to reconstruction is the extension of secondary education. Approximately twelve times as many pupils are now enrolled in secondary schools as there were in 1890.[1] As the rate of increase in secondary school enrolment during this thirty-six-year period is about six times as great as the rate of increase of the general population, it is clear that secondary education now holds a different position than it held in 1890. The effect of this increase of attendance upon the academic expectancy of pupils has already been discussed on p. 362. Not only has the number of pupils increased during modern times, but also the geographical and social reaches of the school have increased. If the era of the high school — 1821 to the present time — be viewed, it will be found that within the last century secondary education has extended from its former limitations to towns or townships of five hundred or more families to its present service to the smallest hamlets

[1] United States Bureau of Education, *Bulletin*, 1924, No. 31.

and to many entirely rural communities. During the same period the social composition of the population of the secondary school has changed. Although, as already stated, principals of such schools before 1850 took great interest in enrolling children of unskilled and semiskilled parents — street-sweepers, lamplighters, coopers, and other mechanics[1] — still the prevailing purpose of the schools, as far as their programs indicate, was that of providing a sound training in a restricted group of general subjects, and not that of providing courses which might benefit particularly the members of unskilled and artisan groups. At the present time it is not unusual to find that more than 75 per cent of the pupils in a high school are from the nonprofessional and the noncommercial groups.[2] This change in the character of the largest groups of secondary-school pupils, together with the organization of curricula for groups not formerly well represented in schools, indicates that the broadened purposes of early high schools are now exhibited in practice as they were only in theory during the nineteenth century. The reconstruction of curricula to meet the changed social composition of secondary schools has effected the content of both traditional and new subjects and the types of curricula offered to different pupils.

3. *A new attitude toward secondary-school pupils.* Third among the sources of problems which have led to the reconstruction of secondary-school curricula is the general adoption of a new attitude toward pupils. The modern tendency is to develop pupil-centered curricula in a sense that was unknown in nearly all schools prior to 1900. The teaching

[1] Cf. the report of conditions in 1846 in Barnard's *American Journal of Education*, XXII, 379–385, 1871. Reprinted in W. L. Uhl, *Principles of Secondary Education*, pp. 72–79.

[2] For data on this point see the author's *Principles of Secondary Education*, pp. 215ff.

of Part I of this treatise must not, however, be so far forgotten as to allow one to conclude that pupil-centered curricula are the outcome of modern invention or discovery. The oft-cited case of the first modern schoolmaster, Vittorino, gives the lie to such a conclusion. Yet it is clear that the school of Vittorino represents a height in curriculum construction that was attained by only the rarest genius of a fertile era. Few observers of that school saw its real character, and few of Vittorino's successors were able to continue on to reproduce the conditions of the Mantuan academy. Indeed, Erasmus was driven by the practices of his day, less than a century later, to castigate his pedantic contemporaries who seem to have thought themselves the spiritual successors of Petrarch and Vittorino. The conventional schools of the sixteenth and seventeenth centuries offered not pupil-centered curricula, but instead a formal grammar-centered curriculum. To the unhonored schools of those centuries — the schools unrecognized by the great contemporary universities — was bequeathed the great heritage of the true Renaissance, and these schools, as shown in Chapter V, transmitted that heritage to the men who established academies in western Europe and, much later, in America. But even in the New World pupil-centered curricula were rarely able to withstand pedantry more successfully than they did in Franklin's academy. As a consequence a grammar-centered curriculum, or curricula constructed with reference to accepted instructional facts, dominated secondary schools until the revolt against the standardized curricula during the early years of the twentieth century.

The new emphasis in the present century upon the pupil in curriculum making called attention to new social needs which will be discussed presently and to pupils' equipments, interests, and needs. Accompanied as it was by a persistent

tendency toward investigation of pupils and their individual differences, this emphasis led to a scrutinizing of subject matter from pupils' points of view. Mental measurements have shown the folly of uniform quantitative curriculum requirements and the impossibility of uniform qualitative achievements. Inventories of pupils' interests have revealed data which are startling enough to the teacher who is indifferent to educational investigations: for example, to teachers who once believed that modern grammarians could utilize certain English classics to improve the adolescent's literary taste; others of these inventories have set in clear light some of the more trustworthy of pupils' interests, and beginnings have been made in the measurement of the permanence and effectiveness of these interests. Prognostic studies of pupils have shown the possibilities of the applications of much subject matter that has borne little fruit in the past; in other cases, prognostic studies have revealed certain pupil needs which were formerly overlooked, and in still other cases these studies have failed to show great need for matters upon which schools have set great store.

4. *New emphases upon local conditions.* The growth of sociology has led to the development of the technique of conducting analyses of social conditions. These analyses have called attention, first, to concrete social data, and second, to variations and resemblances among different localities. When combined with the belief that secondary education should be extended to all adolescents, these social data lead to the questioning of the appropriateness of certain curriculum practices. As shown in Chapter XIV, the social and industrial conditions of different localities are diverse, and may, therefore, necessitate diverse vocational curricula for such cities as Columbus and relatively uniform vocational curricula for such a city as Gary.

Although the resemblances among different localities are perhaps greater than their differences, the differences are significant. Two ways of providing for these resemblances and differences among the needs of different communities were also sketched in Chapter XIV. These two, which consist of differentiation of subjects and of subject matter within basic uniform subjects, are based in part upon sociological data and in part upon pedagogical principles.

5. *The rise of nonprofessional vocational courses.* Conventional curricula of the past provided adequately for only a small proportion of the adolescents of most communities. Agricultural and industrial communities received less attention than professional and commercial types. Indeed, the commercial curriculum has been recognized grudgingly. So great has been the opposition to the formulation of nonprofessional curricula that many critics of schools have accused teachers of attempting to build up educational castes for only the academically minded student. Regardless of the merits of this accusation, its restatement during the last half century has been too frequent and persistent to admit of its being overlooked.

Other reasons should, however, be examined as possible causes for conservatism among educators and the failure to recognize local conditions in curriculum making among educators. Granting the importance of strong vested interests in the subject matter which teachers have prepared themselves to teach, and granting the natural unwillingness of many teachers to abandon either themselves or any of their promising pupils to new branches of subject matter, there are other still more cogent reasons for teachers' remaining unmoved by arguments for what is called vocational education. First among these reasons is the belief in the value of universal or general knowledge as distinguished from rule-

of-thumb formulæ and facts which have little save specific application. This belief in universal knowledge seems to have been developed among all important peoples and to have distinguished those peoples from less important ones. For example, the Greeks, as shown in Chapter II, developed mathematics in a manner not previously known. They were not the first skillful users of mathematical formulæ; in such practices, the Egyptians preceded them. But in the application of the formulæ used by Egyptians, the Greeks perfected them and thus enabled geometers to show the universal application of their principles. The Greeks thereafter pinned their faith to this reconstructed universal form of mathematics as basic and, upon it as a basis, developed new and more perfect formulæ than rule-of-thumb mathematicians had ever devised. In another branch of knowledge, the Greeks themselves devoted their attention for a time to specific rules which lacked universal application. In this branch, rhetoric, the Greeks of the latter half of the Athenian Age possessed a superior body of universal knowledge which could be applied not only to procedure in law courts, but also to all situations in which linguistic expression was demanded. In the science of æsthetics, the Greeks developed universal forms of knowledge by analogous methods. The greatness of Greece as a center of learning seems to have been due largely to this ability of her people to develop principles which had universal application. The patrons of Greek scholars as well as the scholars themselves saw the value of universal knowledge and asked Isocrates, Plato, and Aristotle to teach Greek boys not only how to find the area of a certain field or the height of a certain tower, and not only how to plead the case of a certain citizen or how to chisel a lifelike reproduction of a Pericles; those patrons asked also that boys be taught mathematics as a

universal science and art with universal applications. In this way was laid the basis for the general or universal type of curriculum which has dominated schools since the Athenian Age. Although this domination has been condemned as being merely traditional in origin, the historian shows clearly that the origin and the continuance of this domination is due to a belief in a fundamental principle of curriculum making; namely, the principle that a curriculum should give pupils control over knowledge which has universal application.

Since this principle has in the past been exemplified only in a general curriculum and since vocational subjects have, at least by definition, lacked universal application, schools have offered a general curriculum rather than vocational curricula. This condition is not without precedent in what is now known as general education; as examples, the entry of science and English into the general curriculum was long postponed because of the belief that science and English were not organized so as to yield universal values; upon the same belief, opposition to vocational subjects has continued to the present century. It is important to recognize the principle of the universality of application of general courses and their apparently great training value rather than traditionalism as underlying traditional curriculum practices. As soon, however, as this principle is recognized and acted upon by the protagonists of vocational curricula, the chief defense of a single general curriculum falls. That is, vocational curricula will by that time be shown to have universal value within the vocation or vocations in question. They will, therefore, be able to employ the same reasons for their existence as are employed by all other courses which have universal value. The only difference will be that a vocational curriculum will apply to a vocation, while general curricula

will, in part at least, apply to the activities, basic or marginal, of many vocations. The implications of these paragraphs are, first, that the demand for nonprofessional vocational courses has led to the incorporation of such courses into curricula, and, second, that such courses have gained or can gain full recognition only when they are organized as well in subject matter and treatment as the older subjects of secondary-school curricula; the second raises problems of reconstructing the subject matter of vocational subjects. There are, however, additional related matters which require consideration at this point.

If one turns to the accounts of early New England high schools, one finds that those schools, like Franklin's academy, were designed as institutions which should offer specific training for mercantile and mechanical pursuits. At that time there were, however, few vocational courses organized for high-school teaching; instead of acquiring such skills in school, pupils generally acquired them as apprentices. Notwithstanding this situation, the Massachusetts law of 1827 prescribed as vocational subjects for high schools, bookkeeping and surveying, and many schools offered also navigation, penmanship, "engineering," and applied arithmetic. Although the sporadic offering of these courses does not indicate a very general interest in vocational secondary education, the purposes of the promoters of early high schools were clearly vocational rather than college preparatory, and the omission of vocational curricula appears to have been due to a lack of organized vocational courses readily at hand and not to unwillingness to adopt such courses. As with the academy, however, other purposes soon gained the major interest of high schools. In keeping with the changed attitude of high schools, the Committee of Ten declared in 1893 "that every subject which is taught

at all in a secondary school should be taught in the same way and to the same extent to every pupil so long as he pursued it, no matter what the probable destination of the pupil may be, or at what point his education is to cease."[1] Instead of setting up different curricula for pupils of different destinations, the principle laid down by this committee simplified the matter so that different curricula were hardly necessary save with respect to the relative amounts of time given to foreign languages. But the purposes of this important committee should be understood before one concludes that its members were averse to vocational education. By referring to the list of questions which guided the activities of the committee,[2] one will see that its purposes were avowedly those of the college and college preparatory group. This committee might, therefore, have been strongly favorable to vocational education and yet have offered no vocational curricula. Indeed, their explanatory comments state that if one desired to provide more amply for subjects thought to have practical importance in trade or the useful arts, one could provide options for algebra or science.[3] These references to the report of the Committee of Ten are offered here to counteract the common implication that this committee, as a representative group of teachers, was ignorant of or callous to the needs of vocational education — the committee was organized for the discussion of college preparatory problems and not to discuss the problems of vocational education. Had the purpose of another contemporary committee been to discuss vocational education, college problems would probably have been given slight consideration. The significant point is, however, that the report of this committee was accepted as covering the whole problem of secondary-school curricula. And this indicates

[1] Report, p. 17. [2] See pp. 190–191. [3] Report, p. 50.

the character of the interest of teachers in secondary education in 1893. Since that time it has been necessary to convince the protagonists of a universalizing type of education that certain pupils have little if any need for many of the laws which have universal application in academic fields, and that those pupils are now in secondary schools.

This extended discussion of historical matters has been introduced at this point to show the necessity for unusual scholarship in the constructing of nonprofessional vocational courses. The established subjects are, of course, systematically organized. Until the newer vocational courses are organized equally systematically, believers in the universal psychological values of traditional courses will have a ready argument against the abortive efforts of proponents of the new courses. As the situation has grown out of historical conditions as well as out of pedagogical considerations, certain details in the reconstruction of these courses have been presented.

6. *The reorganization of secondary education.* Combined with the need for reconstruction to meet the problems incident to carrying out the program of the Committee of Ten, came the impetus for a lengthening downward of the period of secondary education. This tendency carried with it a proposal to reduce the time formerly spent in the last years of the elementary school upon elementary school subjects. Any reduction in time allotments, unless accompanied by increased efficiency within a shorter period, would have led to neglect of those subjects. Consequently, there was need for the program of efficient economy in planning and administering each subject of the elementary school, so that a minimum of time should be devoted to those subjects during the seventh and eighth grades.

The reconstruction of secondary education includes, there-

fore, the reconstruction for Grades VII and VIII of the elementary subjects formerly offered in those grades, and,[1] in part, the work of still lower grades. This reconstruction has consisted of both shortening and enriching each of the subjects. Spelling was changed from a study of words which were merely difficult to a study of words which are both troublesome and useful in children's writing. By teaching these words with reference to each pupil's needs and with emphasis upon the typical difficulties in the spelling of especially troublesome words, the time required for mastery of an adequate spelling vocabulary has been reduced and the course enriched. Language lessons have undergone analogous changes: persistent, significant language problems have been discovered by careful investigation of children's oral and written English. Practice materials have next been developed in forms which enable teachers to carry certain elements of spontaneous child activity over to systematic activity. In these ways the materials and activities in English have been reconstructed to meet new conditions. Arithmetic has undergone the same kind of reconstruction as that of spelling and language, as far as examination of content and the improvement of teaching procedures are concerned. There has been, however, an additional form of reconstruction in the case of mathematics for the junior high school grades. This has consisted of drawing together certain elementary and closely related materials from several branches of mathematics. This improvement of mathematics has led to the avoidance of the exasperating postponement of algebra cited earlier in this chapter and has facilitated the union of the geometrical portions of arithmetic with geometry itself. The other

[1] In states where the elementary school was formerly only seven years in length, this reconstruction affected particularly Grades VI and VII.

elementary school subjects have also undergone changes which are analogous to those already mentioned. For the most part, however, the reconstruction of other elementary subjects is due rather to other matters than to the reorganization of secondary education.

Another form of reconstruction was required when secondary education was lengthened downward. This reconstruction consisted in part of re-adapting subjects, which, since the inception of the high school, have generally been offered in secondary schools, to the needs of pupils in lower grades. For the subject of Latin, this downward movement consisted only of restoring it to two of the school years in which it was once offered. The form taken by reconstructed Latin has often comprised, for the first two years of the secondary school, the work formerly known as first-year Latin, organized especially for younger children. Many schools have adapted other secondary-school subjects — other foreign languages, general science, and civics — in modified forms to the first years of a six-year secondary school. These earlier beginnings of languages and other subjects would, it was hoped, enable pupils to pursue long sequences during the six-year period of secondary education. If the value of long sequences has been overlooked by pupils or their advisers, the fault may lie either in the failure of teachers to engage pupils' attention or of administrators to organize long and profitable sequences. The reconstruction program for the junior high school has included also the development of new units of materials, such as the exploratory units or broadening and finding courses described in Chapter XIII.

7. *Changes in college entrance requirements.* In 1899 the Committee on College Entrance Requirements recommended that, of the total units offered by entrants, ten units be

prescribed by departments as follows: foreign language, four units, with no language accepted in less than two units; mathematics and English, two units each; history and science one unit each.[1] This recommendation did not, however, represent all contemporary schools,[2] nor was the recommendation followed later by all schools and colleges. Twenty years later the most striking changes were not to be found by a comparison of the modal prescription, nine units, with that recommended earlier, but by a comparison of exceptional schools and by observing the increased flexibility of requirements.[3] This flexibility has now reached a point at

TABLE XXIII

A Comparison of the Entrance Requirements Which Admit Students to Curricula Leading to the Bachelor of Arts and Bachelor of Science Degrees.*

Degree	Per Cent of Colleges Allowing Unrestricted Election in									
	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
B.A.	12	13	16	16	18	20	21	23	26	27
B.S.	9	11	14	15	17	19	21	22	23	26

* Quoted from H. C. McKown, *The Trend of College Entrance Requirements, 1913–1922*. United States Bureau of Education, *Bulletin* 1924, No. 35. P. 126.

which not more than five units of work are rigidly prescribed, while only three or four others must be selected from prescribed departments. For a portion of the remainder of the fifteen units presented by a student, colleges allow any work accepted for graduation by an approved secondary

[1] National Education Association. "Report of Committee on College Entrance Requirements," in *Proceedings*, for 1899, pp. 632–817. Also published separately by the Association.

[2] Cf. *Report of the Commissioner of Education for 1896–1897*, Chapter XI, for a tabulation of practices at that time.

[3] Cf. United States Bureau of Education, *Bulletin* 1920, No. 27. Requirements for the Bachelor's Degree. P. 68.

school. As shown in Table XXIII, flexibility has increased also by the allowing of unrestricted election of secondary school subjects. With this great increase in the flexibility of admission requirements of most colleges came diverse practices both in college admissions and in secondary school offerings.[1] The extent of diversity is indicated by the fact that many universities, as Stanford, Chicago, and Columbia, prescribed for certain degrees, only 20 per cent of the admission units, while other colleges and universities, as the Catholic University of America, Rutgers, and Bryn Mawr, prescribed, for certain degrees, 100 per cent of the admission units.[2]

During the same period greatly increased use was made of the certification system of admitting college students.[3] Schools and colleges have coöperated in articulating their courses and their requirements, so that certified pupils in many cases are those only who have high secondary-school scholastic averages. Despite the care with which the certification system is used and despite certain of its advantages over college entrance examinations as a selective device, many college teachers criticize the system adversely because of the obvious frailties of some of the students who are admitted to college.

When colleges admit students on certificate or by psychological examination without many prescribed courses, it must be recognized that college entrants, though their marks be the same, are not equally able to pursue certain college courses which have definite subject matter prerequisites. For example, a pupil whose high-school course has consisted mainly of applied arts and commercial subjects may have

[1] See McKown, *op. cit.*, Chapter II.
[2] *Requirements for the Bachelor's Degree.* Chapter II.
[3] Henderson, J. L. *Admission to College by Certificate.* Teachers College, Columbia University, Contributions to Education, No. 50, 1912.

grave difficulty with certain freshmen courses, such as fifth-year Latin and fourth-year mathematics. Such a student may, indeed, be unable to qualify, without sacrificing high-school credits, for the college curriculum which he prefers. One should not, therefore, conclude that, because a college admits students on a flexible basis, it either allows or enables all entrants to pursue the same college curriculum.

TABLE XXIV

PUPIL ENROLMENTS IN CERTAIN COURSES AND PERCENTAGES OF TOTAL DEPARTMENTAL ENROLMENTS IN EACH YEAR OR BRANCH OF THESE COURSES*

A. COURSES ORDINARILY PURSUED IN FIXED SEQUENCES

PERCENTAGES OF TOTAL ENROLMENT	IX	X	XI	XII	TOTAL ENROLMENT
By grades	30.3	29.0	22.2	18.5	678,935
English	30.8	30.5	23.6	15.1	585,968
Latin	48.5	37.2	8.7	5.6	163,515
French	55.3	36.1	7.1	1.5	63,532
Spanish	59.1	34.2	5.0	1.7	65,566
German	57.8	29.4	4.5	8.3	7,908
Manual Arts	46.8	29.9	14.6	8.7	94,632
Household Arts	48.5	28.1	13.4	10.0	100,156
Agriculture	39.6	31.2	19.2	10.0	21,812
Art	43.4	33.0	14.3	9.3	45,030

* Davis, C. O. *Our Secondary Schools.* North Central Association Bulletin, 1925.

Among the results of these changes in college entrance requirements, changes have occurred in the curricula provided for and elected by secondary-school pupils. The data contained in Table XXIV show some of the reasons why such changes affect the need for reconstruction of courses and curricula. The 678,935 pupils who were enrolled in Grades IX to XII in 1571 North Central public high schools which reported to the association in 1925 constitute a representative sampling of pupils in certificating territory. These data show that 46.8 per cent of the pupils enrolled in

mathematics are pursuing a first-year course. This percentage is disproportionately large in comparison with the enrolment in plane geometry, but even so, it represents

TABLE XXIV (*Continued*)

B. Courses Not Pursued in Fixed Sequences

Percentage of Total Departmental Enrolment

MATHEMATICS (Total departmental enrolment 376,945)	
Beginning Algebra	42.8
Advanced Algebra	10.3
Beginning Geometry	34.6
Advanced Geometry	4.0
Trigonometry	1.2
Arithmetic	3.1
General Mathematics	4.0

SOCIAL STUDIES (Total departmental enrolment 422,337)	
Community or Vocational Civics	11.0
Ancient History	17.4
Modern European History	19.9
General History	7.8
United States History	26.6
English History	1.3
Economics	6.3
Sociology	2.8
Advanced Civics	7.7
Problems of Democracy	2.2

SCIENCE (Total departmental enrolment 295,044)	
General Science	26.4
Physical Geography	12.1
Botany and Zoölogy	21.8
Physics	19.6
Chemistry	20.1

COMMERCIAL STUDIES (Total departmental enrolment 309,395)	
Typewriting	32.7
Stenography	22.5
Bookkeeping	20.5
Commercial Arithmetic	13.7
Commercial Geography	7.5
Office Practice	3.1

MUSIC (Total departmental enrolment 216,393)	
Chorus	50.5
Orchestra	11.5
Band	8.3
Instrumental (Individual)	3.7
Glee Club	26.0

considerably less than the total number of ninth-grade pupils. If all high-school pupils pursued mathematics during their first two years, these percentages would be higher and would represent larger numbers of pupils. These facts

indicate, therefore, that mathematics is not pursued as a two-year course by all who elect it for even one year. The data for the foreign languages indicate that each of them is actually only a one or two-year course for almost all the pupils who begin it. In science, general science draws more students than are enrolled in any other science course. From the original data, it appears that few pupils pursue more than one year of science in addition to general science and that this additional year consists of biology, physics, or chemistry. The data for the social studies indicate that these studies are elected so that most pupils pursue United States history if they remain in school until the year in which it is offered, and that less than one-fourth of the pupils pursue civics during the early years of high school. The enrolments in all the other departments, save English, support the conclusion that secondary-school curricula, at least, in certificating territory, comprise chiefly one- or two-year courses in different departments. As the work of the older departments was planned as long sequences, this actual shortening as shown in these data interferes with the advanced work in these departments. Since the advanced rather than the first two years of work in these departments were formerly depended upon to give meaning and significance to the courses, and since those years have been eliminated by most pupils, a reconstruction of these courses has been necessary. To meet the needs which have accompanied the increasing flexibility of college entrance requirements, reconstruction is needed, therefore, (1) to enable pupils who elect only the first years of a course to obtain the best possible training in those years (the best training for the pupil who takes only one or two years of a long course may be very different from that of the pupil who expects to pursue a long sequence in the department); (2) to enable teachers to plan their courses

so that the greatest possible hold upon pupils' interests can be got; in short, to enable pupils to pursue work which is at once elementary, interesting, and significant, with a view to leading them to elect advanced work which is also significant.

8. *Restatements and refinements of objectives.* Although the objectives of education have, as stated in Chapter IX, always been derived by analyzing and interpreting the needs of society, the types of analysis and interpretation have varied from those which as Plato's, dealt with an ideal state to those which, as Charters', deal with specific occupations. An increased general interest in analyses of specific occupations has characterized the last generation. While this interest in occupations is in part a reflection of the attempt to make education more definite, it is also in part a product of the humanitarian and sociological tendencies which have been potent in education for more than a century.

As in other countries the needs and ideals of education have been an expression of the conditions and philosophy of the people, so the needs and ideals of American education should be an expression of American conditions and philosophy. The conditions of America demand forms of efficiency and culture which, by their relation to real life, can be extended in secondary schools to all classes of population. As Dean Small contended in the Report of the Committee on Economy of Time in Education:

> Education must be in harmony with its environment, but it must develop also original power to change the environment and to cope with whatever problems of efficiency and ethical conditions a given period may present. New views of the needs of society change the old aristocratic ideal of culture and make it democratic in opportunity and purpose. This change requires that less time be given the old humanities and more weight be placed upon preparation for efficiency and service. The scientific method,

broad concepts, and the higher appreciations must ever be the foundation of citizenship and of practical activities; but a larger proportion of time must be given to the vocational aims. This ratio will be approximately determined as a question of proper balance between receptive study and practical motor activity, also as a question of the economic division between preparation for life and active life. There has always been a selfishly unsocial factor in culture, and the whole movement of today is to correct this by connecting higher education and all education with democracy.[1]

In addition to a restatement of objectives in terms of the cultural conditions of American life, a new refinement of objectives to make them definite and effective has been attempted. This refinement has led to the questioning of large portions of subject matter in all subjects of elementary and secondary schools. It has been shown in Chapters IX and X that this refining of objectives into many specifics gives new meaning to the more general, though valid, objectives of earlier philosophers of education. In the previous discussion of this matter the term *objective* was defined as a value set up for attainment together with appropriate plans for activities which lead to the attainment of the value. It was there emphasized that much of the visionary character of discussions of education was due directly to the mistaking of values and ideals for objectives. The modern attempt to state objectives in a more inclusive form necessitates the reconstruction of subject matter. That is, when one includes in the concept of objective both value and means for attaining the value, there is a necessary change of subject matter with every change of objectives. Two aspects of objectives are, consequently, effective in leading to a reconstruction of curricula: first, the broadened scope of objectives which leads to the development of a broadened scope of programs of studies; and, second, the refinement of objectives which

[1] Here quoted from W. L. Uhl, *Principles of Secondary Education*, p. 484.

leads to the construction of definitely useful curricula, whether the curricula are for vocational or avocational purposes.

9. *The development of improved teaching procedures.* Investigations of the ways in which the mind works have led to the reconstruction of subject matter in every fertile educational era. As shown in the preceding section and in the discussion of the significance of the will to learn in Chapter XIII, there are both right and wrong ways of organizing subject matter for instructional purposes. The importance of organizing subject matter into interesting, intelligible, and significant units has already been indicated in the present chapter.

The essentially different methods of organizing subject matter are well known. For one of these methods instructional matter is organized logically as viewed by the learned master; for the other method it is organized logically as viewed by the learning pupil. It appears that the learned master is not annoyed when he encounters fragmentary details in isolation as they often appear in the opening statements of textbooks or in the opening statements about each topic within a textbook. The reason for the master's immunity to annoyance by apparently isolated detail is that he is able to envisage such details in their proper relation to the whole subject; psychologically, therefore, such details are not isolated for the master — they are, for him, isolated only mechanically as they appear in a book or in an oral account. The master's mental processes are, however, very different from the novice's when the novice first encounters isolated detail about such a subject as physics. If, for example, in beginning the study of physics, a pupil meets first a definition of matter, then of a molecule, then of an atom, and then, in rapid succession, definitions of the prop-

erties of matter, he has only a slight probability of envisaging these details in their proper relationship to the whole subject or to any part that is significant to him. A pupil-centered point of view decrees that instead of this condition, each subject should grow out of pupils' activities rather than out of the fulness of the master's grasp of a whole subject. In the case of physics, this may mean that the subject should open with a simple account of a common experience with physical laws, say of gravity, as they affect a simple situation such as moving a piano into a house. Later, the general principles and technical definitions can be presented in an intelligible setting. Such an approach leads the pupil by way of his own experiences to direct his activities so that his approach to technical detail grows out of his experiences. The reconstruction of science according to this principle marks many of the most important changes which have recently taken place within the branches of that subject. Well-ordered courses in general science in their relation to the pupil's environment and past experience and to subsequent articulation with other science courses illustrate the application of this principle to entire courses. Reconstructed courses in mathematics, English, physical education and other subjects provide additional examples of the same principle.

This principle, that of developing curricular activities out of children's experiences and then articulating these elementary experiences with more advanced curricular activities, is operative also in the organization of curriculum units. When operating in this manner, this organizing principle dictates that a unit or topic of subject matter, that is, of curricular activities, should be approached, as stated above, in the light of pupils' former experiences and interests, and that the next step should consist of giving an overview

of the entire topic. This overview indicates the main facts of a unit and the relative position of these facts to the whole unit.[1]

10. *Increase and dissemination of knowledge of education.* A survey of the problems which led to a reconstruction of curricula will, if pursued historically, show that few if any of the problems are new. Instead, such a survey indicates that most of these problems, if not all of them, have been present for centuries and that many of them have been ably discussed by sound and influential educators. During no previous age, however, was it possible for an author or group of authors so to influence the educational procedures as it is at present. For two reasons a point of view can become more influential now than formerly. First, there has been a considerable increase in the knowledge of education during the modern age, and, second, this increased knowledge can now be more readily disseminated than would formerly have been possible.

The implication of these two points are that in our changing age, with its facilities for publicity and improved methods of operating educational machinery, reconstruction of curricula is a necessary consequence. It should be understood that reconstruction as applied to different subjects represents less of new thought than of new opportunity and of increased scope of educational leaders. That is, reconstruction plans are the fruition of the educational endeavors of sound but stifled pioneers whose efforts were hopeless so far as immediate widespread effects were concerned before the days of the professional study of education. Out of this

[1] Cf. Herbart, J. F. *Outlines of Educational Doctrine.* (Lange's translation), The Macmillan Company, 1901; p. 114. Also cf. Comenius in *The Great Didactic* (Keatinge's translation), A. and C. Black, 1896, p. 340. More recent exponents of the same principle are John Dewey, H. L. Miller, H. C. Morrison, and W. H. Kilpatrick (see bibliography at the end of this chapter).

increased knowledge and its wider dissemination has grown a questioning of curriculum practices and an increased dissatisfaction with traditional organization of activities.

An appraisal of modern reconstruction of curricula. The present appraisal of modern reconstruction of curricula will be conducted, first, with reference to the problems which led to reconstruction, and next with reference to new problems or difficulties which have been encountered. Such an appraisal, if the question were wholly a financial one, might easily be made objectively by comparing the present returns in relation to the investment with those of the past. As the reconstruction of curricula is largely a question of mental and spiritual growth, a comparison relative to conduct should be made between earlier results of training and those of the present day. Such a comparison cannot at present be entirely objective.

During the present transitional state of reconstruction, incidental difficulties tend at times to discredit all attempts at reconstruction. One critic may assert that modern courses of study have been weakened or diluted, particularly for Grades VII and VIII. This critic may be answered by the statement that subjects which were formerly offered in Grade IX and are now offered in lower grades must be reconstructed and that reconstruction should not be adjudged a failure if its first forms are unsatisfactory. Like other temporary forms of ill-organization, this reconstruction may be a necessary accompaniment of a transitional period of progress. Besides new organizations of materials, the administrative practices of a school may lead to criticism of curricula. A school may, for example, transfer a subject, as introductory Latin, from Grade IX to both Grades VII and VIII, only to find later that pupils arrive at Grade IX ill-prepared for the work formerly done in Grade X. Upon in-

vestigation in one city, it was found that, owing to a continuance of an elementary school no-home-study ruling, pupils spent less time over the period of two years than they had formerly spent in Grade IX alone. This condition, together with a newly reconstructed form of introductory Latin, combined to produce results for which reconstruction was at first charged. Such instances should warn the critic against assuming that all the undesirable results which accompany reconstruction are due to reconstruction itself.

Although there are obvious reasons for the systematization of curricula, there are also many reasons why systematization cannot and, at present, should not lead to a form of organization which will be difficult to alter. This does not mean that materials cannot or should not be well organized into logical units, but that there are, in a progressive age, so many variables in the curriculum situation that little hope can be cherished for permanence of forms of organization. The variables in this situation have been enumerated in the discussions of this chapter and include the extension of secondary education, the changing attitude toward pupils, the increasing and changing emphasis upon local conditions, the rise of vocational courses, the reorganization of secondary education, changes in requirements for admission to higher institutions, the refining of the objectives of education, the development of improved teaching procedures, and the constant increasing bodies of knowledge. No believer in progress can hope for an early satisfaction of any of these variables. Besides, there are many forms of systematization, each with its merits and deserving of a trial or period of experimentation. There are, consequently, ten sufficient reasons why curricula should remain in a flux for many years. Disturbing as this view may be to orderly-minded persons who desire a systematic, final organization of

materials, this view has the supreme advantage of intriguing the attention of investigative persons who will explore new forms of organization and lead to higher educational levels. If, as the foregoing discussions contend, present-day opportunities for change foster progress in the satisfaction of these ten variables, modern reconstruction should be encouraged.

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CHAPTER XVII

CONSTRUCTING AND ADMINISTERING SECONDARY SCHOOL CURRICULA

Guiding principles for the construction and administration of curricula. The construction and administration of curricula must be conducted in view of principles drawn from all the components of the complex known as American life. These principles are, for the most part, drawn from the four sources which have already been discussed in this treatise: history and criticism, objectives, pupils, and local conditions. A recital of these principles indicates the total significance of all these sources no more than any other epitome sets forth the significance of the matrix from which it was drawn. The guiding principles which are to be presented in this chapter are instead the names of curricular concepts whose connotations comprise the entire background already sketched from which they are derived.

Furthermore, each principle, like each datum in an equation, may, under varying circumstances, assume different meanings and values. That is, an equation can be used to illustrate this situation if on one side of the equation be placed the product of the guiding principles and available activities and subject matter, and on the other side the total program of activities and subject matter. This formula will then read as follows: (Principle 1 — Principle 2 — Principle 3 . . . Principle n) (available activities and subject matter) = total program of activities and subject matter. As in any other algebraic equation, the items of this formula

are variables whose meanings and value will alter the result of the implied operation. Therefore, no program of studies and activities can be properly constructed and administered unless it be the true product of all the significant items after these items have been corrected for the given curriculum situation.

Guiding principles drawn from the history and criticism of curriculum practices. The basic principle upon which curricula have always been constructed is that curricula should be planned to enable pupils most effectively and most fully to realize themselves. Desirable self-realization has already been defined as a process which takes place when an experience grips an individual's attention with sufficient force to draw out and lead to an expression of his capacities. Such self-realization is, of course, measurable only in terms of the objectives of education.

Although the modern curriculum maker must be dominated by this basic principle, his interpretation of it is far different from that of men of earlier times. Among primitive peoples, as we have seen, one's self-realization was measured in terms of one's ability to participate successfully in restricted tribal life. During the Middle Ages self-realization was measured by standards of the empire and the church. The Renaissance formulated a new scheme of objectives, but that scheme was never so fully accepted as to enable men generally to complete their separation from the Middle Ages and construct a new order of objectives based upon a new philosophy of life. As examples, Erasmus and Sturm employed a philosophy which was heavily weighted by that of the mediæval era. Although the systems of schools which were erected in England and Germany upon the philosophy of these men represent an advance beyond mediæval schools, they frustrated the plans of Vittorino

and his more intimate followers. This tendency of each new era to find much of its philosophy and many of its practices in a preceding era has been characteristic of the chronicles of education. The steadying influence of tradition is, however, open to the criticism that progress becomes exceedingly slow when practices are dominated by tradition. At this point comes the exhortation of Eliot, who, as we have seen, found in the progressive periods of educational development, a brief for boldness. To support his case, Eliot cited the introduction of Greek, English, history, and science into the standard curricula of modern times. Each of these subjects was introduced by men of boldness and not by men who drew their philosophy chiefly from the Middle Ages. From a continuous reconsideration of contemporary conditions of life arose new appreciations of the needs of life. From such appreciations arose, in turn, restatements of the objectives which formed bulwarks of continuous progress. From contemporary needs, the bold leaders or critics of each progressive age thus drew their guiding principles.

a. Serious danger lies in the early stereotyping of curricular practices. Stereotyped ignorance is bad, but the stereotyped knowledge or belief of one generation often becomes the ignorance of the next generation, and, owing to force of tradition, is worse than the unarmored ignorance of the untutored masses. A tendency toward such stereotyping has been persistent in all ages because of the assumption readily accepted by many persons, that contemporary practices are of proved merit and adequate. The adoption of this principle places curriculum makers on their guard against an uncritical veneration of the past, and also against rigid prescriptions based upon their own observations; or, stated positively, the value of adopting this principle lies in its encouragement of continuous experimentation and

reconstruction to meet changing needs and to incorporate newly discovered facts. Decadent educational forms are then supplanted, for they run counter to the times. The death of subjects in a progressive land is the direct result of early stereotyping and unwillingness to change.

b. The educational theory and practice of leaders ordinarily runs from one to five centuries ahead of common practice. The acceptance of this principle should be accompanied by the assumption that the proposals of frontier thinkers must not only be scrutinized, but also that they must be fortified against the attacks of persons who complacently accept current practices. This principle contains two implied warnings: if an educational leader expects his proposals to gain general acceptance he must, in the first place, gauge them so that they will promote achievement in what has already been attempted — he must fulfill rather than wholly supplant the law. In the second place, this leader must not work alone; only by coöperative planning can he hope to develop sufficient momentum for successfully carrying out his policies. Present-day opportunities for the dissemination of knowledge should be utilized to prevent such isolation of leaders as existed before the days of printing.

c. Although short cuts to mastery have been numerous, they have seldom, if ever, had the attention of the best minds. This principle has two important aspects. First, it seems that scholars have discounted short roads to learning as being opportunistic and irrational when compared with long courses which are deemed more likely to be systematic and of universal application. Second, since scholars have neglected short unit courses, one cannot now judge such courses; indeed, it is conceivable that, for certain pupils, such short roads to learning might, when systematized as short units, be far more effective than are the fragments of

long courses which are often pursued by pupils regardless of the length of their stay in school.

d. As a result of changes in educational philosophy, curricula have risen and fallen, although, superficially, their content has remained unchanged. For example, the study of Latin during the early Renaissance represents a rise, but the study of the same subject during the decadent humanistic period represents a fall. The operation of this principle leads also to the employment of both good and bad practices under the guise of all subjects, if both good and bad teachers conduct courses in those subjects. This principle has provided a cloak for obsolescent curricula, because one might always find certain excellent teachers who could supply vital content to threadbare subject matter. While the critic may object to the use of this principle as a cloak for antiquated curricula, he should face also the likelihood of a vital subject's being brought to naught through unskillful teaching. For this principle applies equally to decadent and vital subjects. An antiquated curriculum if well taught may be better than a modern curriculum badly taught; but a modern curriculum well taught is, of course, preferable to either.

e. Education needs both freedom and protection. The present decade is not the first one to receive the tender ministrations of well-meaning but misguided guardians of authority, purity, or patriotism. Such ministrants attempted to stem the progress of both Greece and Rome, but in each case the advocates of freedom were the stronger. During the long period which followed ancient enlightenment these advocates were shackled, and the result was an era which few modern men wish to have repeated. During the mediæval era there was, however, a third party to the case — the destroyer; protection even at the cost of freedom was

probably preferable to destruction. But unless actual destruction is imminent, one may seek freedom rather than protection; for stagnation follows too much protection, while freedom admits of the varying practices of both progressives and conservatives. Furthermore, one may find in the history of education that the advocates of freedom are often thwarted quite as much by teachers as by other persons who would impose their views upon teachers. Curriculum makers can hope for but little of the proper sort of protection unless both their fellows and the laity grant a large measure of freedom. There is need for standardization as a guaranty of definiteness and also for flexibility as a promoter of change.

f. New subjects and new forms of organization have to run the gauntlet of destructive criticism by scholars. The value of a newly proposed subject or of a subject recently introduced into schools is seldom indicated by the comments of the majority of teachers. For example, while Shakespeare, Spenser, and Milton were producing the works which formed the backbone of English literature courses of the late nineteenth century, their contemporaries among the teachers were guilty of administering a desiccated curriculum which, as an example of a program without a trace of social justification, scarcely has a rival. Those teachers opposed the minority of their own ranks who advocated the study of English. Science, likewise, underwent the criticism of teachers who were, according to their own estimates, offering more useful subjects. Similar examples of adverse comments upon new ways of organizing subject matter can be found. The Latin teaching of Erasmus, the logic of Ramus, the mathematics of Descartes, as well as the recently reconstructed courses in English, Latin, modern foreign language, science, and mathematics are instances in which traditionalists have counseled against change — and have in some

cases been bad counselors. That is, leadership by schools has not always looked toward progress; when, therefore, new subjects or new forms of organization fail to gain the support of stalwart teachers, one should remember that from such a crucible have come all modern practices. One's yearning for the new should not, however, blind one to the fact that new learning itself grows out of old.

g. In America cultural education means democracy of opportunity for self-realization. Such opportunity has already been defined in terms of a dynamic mental and social attitude accompanied by a broad mental perspective — Matthew Arnold's definition — and in terms of the major activities of modern life — Bobbitt's definition. No student of history can overlook the fact that this is a new concept and one which would have been rejected in theory as well as in practice by every large and representative group of educators prior to recent decades. Nevertheless, a failure to understand that the American secondary-school system was founded upon this principle still prevents certain Americans from comprehending the scope of secondary education.

Guiding principles drawn from investigations of the objectives of secondary education. Despite the integral relationship of objectives and procedures, a significant feature of most systems of educational objectives is their externality. Aims or objectives are usually set up outside rather than inside the educative processes by which they are to be realized. Even when an attempt is made to integrate aims and the activities which are believed to be appropriate for their attainment, there is seldom a retesting to measure attainments in terms of the aims. Aims thus become unproductive decorations which languish in prefaces of books and syllabi. As Dewey contends, however, an aim is the proper determinant of activities and procedures and not

something divorced from the means by which it is to be reached.[1] When conceived in this sense, the investigation of objectives yields important principles for curriculum-makers.

a. Since educational objectives are guides in planning procedures which will lead to proficiencies in certain activities, these activities should be analyzed to discover what proficiencies are demanded. The magnitude of such analyses drives the analyst to select for investigation those activities in which the need is greatest and the willingness of teachers and workers to reconstruct procedures which are the most promising. When an activity is selected for analysis with a view to planning curricular procedures, three steps are necessary: first, the discovery of the duties and traits required by it; second, the duties and traits as discovered must be classified; and third, the results of the analysis and classification must be interpreted and translated into curricular terms. At each stage of this long analysis dangers beset the investigator, for he must select representative examples of the activity, cover its activities comprehensively, and view both its elements and the available procedures in their proper perspective as he interprets his data.

b. Since educational objectives are internal or integral parts of curricula, the formulation of objectives must comprise experimental trials of procedures and activities for their attainment. Logically organized plans are not always successful when submitted to actual use, and, after readjustments of plans have been made, there is danger of neglecting values which were included in the first trial procedures. It is, therefore, necessary to conduct experimental procedures and activities in such a manner as to guarantee provision for the many variables of the situation. Experi-

[1] *Democracy and Education*, p. 129.

mentation includes, consequently, not only a measuring of whether or not pupils can master given subject matter, but also a demonstration that a new course or trial procedure provides for a coördination of values, practices, and content.

c. Curriculum making by the local teachers of any school system has for two of its most important functions the enrichment of courses and the experimental use of reconstructed curricula. For each teacher in a given school system and perhaps even for any teacher in certain systems to become expert in all problems of curriculum making is manifestly impossible. Despite the pronounced limitations of the busy teacher, he has an opportunity to operate in spheres which are denied to the widely heralded curriculum expert; that is, the classroom teacher is the person who actually administers curricula and he is, therefore, able to set plans in motion and, if resourceful, to enrich by additions drawn from or suggested by local conditions, pupil characteristics, or the general purposes of the school. In addition to these opportunities to contribute to curriculum making, there is his opportunity of contributing important data and advice in the actual charting of the larger aspects of curricula. As the curriculum expert may be deficient in his knowledge of intimate classroom conditions, so the classroom teacher may be cramped too much by the constant impressions made by a small, highly localized situation. It is, therefore, desirable that the limitations as well as the contributions of classroom teachers be recognized.

Guiding principles drawn from the consideration of pupils' equipment, interests, and needs. The history of education discloses periods during which the prevailing tendency has been to seek the principles of curriculum construction outside the pupils. There have been writers also,

who, like Rousseau, have sought these principles within the pupil. Present-day studies of pupils combined with analyses of life activities warn the curriculum maker against seeking his principles solely in either the pupil or in the activities of adults. These studies indicate that valid principles can be formulated only in view of both these sources of guidance — pupils and major life activities. Although the principles stated in this section emphasize pupil characteristics, they should be considered with reference to the world in which the pupil lives and that in which he will live as an adult.

a. All curricula exist solely for the self-realization of pupils in terms of educational objectives. Emphasis has already been laid upon the fact that many influences besides the pupils' characteristics unite to determine the extent and character of self-realization. The serious discrepancy between the prospectus of a course and the actual pupil attainments may, therefore, be sought in such conditions as the school, the neighborhood, or the classroom teacher as well as in the pupils themselves.

Although these conditions outside the pupil greatly influence self-realization, there is a point on the scale of pupil equipment below which failure in certain subjects is at least imminent. As this point of imminent failure has been roughly charted for the pupils of many schools, it should be considered in the planning of curricula and in the organization of all courses so that the curricula and courses can be pursued to the greatest advantage by the pupils for whom they are intended. For this curriculum planning, there is needed a more complete pupil inventory than was required when the program of studies was less complex and the secondary school population less heterogeneous. The large number of determining variables in the pupil-curriculum situation should, however, warn curriculum makers against

giving too ready an answer to the question as to who should pursue a curriculum or subject of study.

b. The education of children should grow out of and be built around children's interests. Laboratory investigations as well as classroom experiences lend support to the validity of this principle. The will to learn and the accompanying favorable conditions of learning are based upon the adoption of it. The acceptance of the principle does not, however, preclude strong, resourceful teachers guiding their pupils into activities of which undirected pupils would never dream. Furthermore, pupils, especially those who are highly gifted, can supply motive power for activities which are not, at times, driven by obvious immediate interests. The acceptance of this principle means, therefore, the acknowledgment of the importance of such favorable conditions for learning as the following: (1) the pupil's adoption of a curricular activity as worthy of his efforts; (2) his willingness to search for efficient processes of mastery; (3) his ability to discover efficient procedures; and (4) his being encouraged in many ways and apprised of his ability to accomplish desirable results in his curricular pursuits. By defining in this manner the principle of the curriculum in its relation to interests, appeal is made to both primary and secondary types of interests in fields where interests are as broad in scope as the entire program of studies. That is, this principle may lead pupils to see that certain curricular activities can be performed and to see the pleasure of adequate performance, even though the pupils may for the time fail to see the larger significance to themselves of what they are mastering.

c. The real problem of interests is that of harnessing spontaneous tendencies for productive activity and thus erecting advanced hierarchies of interests. Curricular

activities must, therefore, be graded according to the pupils' stages of development with respect to their interests; at an elementary state the pupils react to relatively simple stimuli, while at a later period a more advanced stage of reaction is reached. Chronologically, these stages are not necessarily widely separated. At one stage of a science topic, pupils may, for example, draw together various experiential items, while at a more advanced stage they may classify these items to show their relationships, and at a still higher stage they may search their experiences for further applications of a principle which they may have evolved. The problem for curriculum makers, including classroom teachers, consists largely of unifying this development so that the conceptual stage can actually as well as theoretically grow out of the primary experiential data or interests of pupils.

d. Since interests are ends as well as means to ends, curricular activities should be planned to foster desirable interests which pupils have at any stage of their development as well as to cultivate new or more complex interests. The interests which junior high school pupils have in tales of adventure may, in accordance with this principle, be fostered quite as well as those which senior high school pupils are supposed to have in Elizabethan drama. The application of this principle leads to a broadened experiencing of a pupil's equipment at a given stage rather than to the advancing of the pupil to a different stage. The slowness with which such matters as literary taste, historical-mindedness, or scientific attitude develop suggests that curriculum-makers have, in their haste, attended too slightly to this principle in the provision of rich academic experiences at the simple interest levels. Some of the possibilities of applying this principle to the enrichment of the program at

early high-school levels have been discussed in the preceding chapters of this book.

e. Curricula consist of classified activities for pupils — activities which provide the training requisite for individual and social training during and after school. By the term *activities* is meant the combination known as subject matter and the teaching and learning procedures employed for the mastery of subject matter. For example, a brief series of activities which might be employed in the study of Greek music includes listening to the skillful reading of Greek lyrics, the singing of the Greek modes, and the listening to and, perhaps, performance of the "Hymn to Apollo." These activities supplemented by motivated readings about Greek music are to be contrasted with a course in which subject matter is learned only to be recited — and forgotten. When activities are selected so that they will lead to the mastery of the best thought and practice of the pupil's present and future pursuits — a composite of responses to an integrated array of pupil needs — then the needs of the pupil are met by a rich and useful curriculum. A special type of need of college preparatory students has long existed and has received the attention of many students of education. This need demands, however, a searching analysis to find out whether or not the formidable array of courses once prescribed by colleges was ever actually needed to enable secondary school graduates to succeed in college. The lack of articulation which Thorndike reports between algebra and the subjects for which it does or might prepare[1] suggests that much of what has been required as prerequisite to certain courses may have attained this position during one age and held its position later by virtue of its early eminence rather than because of continued articulation and value.

[1] See reference, p. 318.

Guiding principles drawn from the consideration of local conditions. In Part V were presented samples of the objective data which have been collected by school surveyors. Out of those data come two principles which tend respectively to emphasize the necessary differences and similarities among localities. The influence of the school plant upon curricula was also discussed in the light of examples of what has been done in different school systems.

a. Local differences among schools are of such nature and significance that variations in curricula should be made. These differences should consist in part of different curricula, as commercial, agricultural, or industrial curricula. In addition to such differences, there should be adaptations of local situations so that local data and problems are interwoven with the activities of the classroom. Especial emphasis has been laid upon the use of such local materials as points of departure, as illustrative data, and as opportunities for application in the planning of activities of any related unit of a course.

b. The similarities among localities are so great that the activities and content which are good for one locality are good for many other localities. Basic language, science, mathematics, social studies, art, and music are the same the country over. There are, as stated in the preceding paragraph, important differences in the approach to the basic aspects of these subjects, their enrichment, and their applications. Emphasis upon the similarities among localities stabilize curriculum construction and make the findings of investigators in one place available for application in many other places.

c. The curriculum which a pupil traverses is determined largely by the school plant in which it is offered. Three components of the school plant — the instructional staff,

the buildings and grounds, and the philosophy and organization of the school — have each a sufficient influence to make or mar a curriculum. Although most students of education agree that the instructional staff is the most important part of this group of influences, the possibility of stifling or inspiring teachers by a bad or a good school philosophy and organization is obvious. Besides the aspects of general management of the school which have been presented in Chapter XV, there are administrative matters which affect curricula and which will be discussed in the next section of the present chapter.

Guiding principles which grow out of plans for reconstructing curricula have already been presented and discussed at length in the first chapter of the present section and will not, therefore, be repeated. Each of the ten problems catalogued in that chapter, together with the appraisal of modern reconstruction, should be considered as a part of a program of curriculum making.

Dependence of curricula upon types of school administration. America has inherited and devised many types of school administration. While some of these types have been devised largely for curricular reasons and all affect curricula, one cannot prove that the adoption of any one type has uniformly accompanied either a good or a poor program of studies. As Stuart has shown, a comprehensive high school can offer either specialized, two-year, exploratory curricula or conventional, four-year, college preparatory curricula.[1] Likewise, junior high schools can offer either a variety of curricula or a variety of suggestions within the same curricula. As an example of the latter a school can offer required science as a three-year course in the junior high school by

[1] Stuart, M. H. *The Comprehensive High School.* The Macmillan Company, 1926.

organizing each unit of the course as an exploratory unit as is done in an Appleton, Wisconsin, junior high school, in which such a unit as forestry is presented as a series of problems rather than as a body of ultimate knowledge. Many problems and principles are developed in this unit, and many others are left as suggestions for the student who wishes to read and investigate further.[1]

Instead of attempting to formulate principles to cover all cases, the present section will describe existing conditions and suggest considerations connected therewith. Some schools and certain courses within other schools are organized upon a 2–2 or a 3–3 basis, with courses prescribed and elective, respectively, and *vice versa*. In schools which prescribe the first half of a course or a curriculum, there is a belief (1) that pupils must pursue certain studies as prerequisite to later success; (2) that certain studies are nearly if not quite indispensable selective devices; (3) that all pupils should survey their educational opportunities systematically, though in their own way; or (4) that uniform training should be continued throughout early adolescence to ensure the common culture or understanding which is required in a democracy. In schools which provide electives for the first half of a course, it is contended (1) that any one of many curricula is beneficial for certain pupils and that pupils' traits should be the determining matter in curriculum choices; (2) that few if any studies are quite indispensable for either academic or nonacademic success; (3) that exploration necessitates the pursuit of different courses rather than the pursuit of the same courses in different ways; and (4) that, by adolescence, pupils have sufficiently dif-

[1] Cf. the mimeographed syllabi on such topics as "Forestry," "Art," "Astronomy," and "Our Food Supply," which have been prepared for pupils' use under the direction of Superintendent Ben J. Rohan.

ferentiated attitudes and powers to warrant their pursuing different curricula.

The degree of uniformity among curricula for the latter half of a course is seldom as great as that for the first half save in case of college preparatory curricula which admit of little variation. By the time the pupil has reached these years he is, theoretically, and, in some cases, practically equipped to select his own courses — a form of equipment which one often loses straightway if he is thereafter admitted to the freshman year of a higher institution! It is, however, assumed by advocates of prescription for these last years of the secondary school that a pupil should elect a curriculum and pursue it seriously and that he should be guarded against the temptation to elect either elementary or unrelated courses. As administered, this curriculum policy is often flexible enough to allow the election of at least one or two courses during these years.

The extent of flexibility in individual pupils' curricula is, indeed, one of the most striking characteristics of curriculum administration. As a part of an investigation of curricular conditions in Wisconsin, the individual registrations of 19,687 pupils were examined to discover the diversity of their individual programs. Table XXV summarizes these data for five schools selected at random and shows greater diversity of individual programs in the later years of the high school than in the early years, and also that there is greater diversity in large than in small schools. Although the explanation of this situation is simple — the late years of school and the large schools provide more subjects than the early years and the small schools — an analysis of the data show other conditions which are not simple. First, it is not apparent from the investigation that the wide diversity of pupils' programs is, in reality, the result of the offering of

diversified opportunities which meet actual individual needs, but rather that it is, in part, the result of needless and wasteful duplication of courses offered by schools. Although it may be desirable to offer specialized courses for certain pupils one can properly attempt differentiation of work within courses before expanding English, for example, to include twelve courses now offered in this state in addition to the regular four years of English. Other questionable forms of diversity are those in which pupils were found to use

TABLE XXV

THE RATIO OF PUPILS TO CURRICULA

(This table reads as follows: In a school of 81 pupils, there are six times as many pupils as curricula in Grade IX, twice as many in Grades X and XI, and four times as many in Grade XII, and so on.)

SCHOOL ENROLMENT	RATIO OF PUPILS TO CURRICULA			
	Grades			
	IX	X	XI	XII
81	6:1	2:1	2:1	4:1
126	9:1	7:3	5:3	8:3
278	8:1	2:1	7:5	2:1
621	4:1	7:5	7:5	11:10
1,184	3:1	7:3	7:6	4:3

some basal textbook in two civics classes of Grades IX and XII, respectively, and in science sequences in which the content of general science, agriculture, and such courses as physics and biology indicate clear cases of duplications. This investigation indicated that, if the present practice of wide diversity of individual programs is desirable, there should be a reconstruction of content to eliminate unnecessary duplications within courses pursued by the same pupils,

and thus to insure pupils a diversification of opportunity which is now implied though seldom realized.

Certain representative schools organize curricula so that there is consistency of purpose within wide possibilities, thus admitting, if not requiring, the pursuit of major and minor sequences. Regardless of the academic or vocational expectations of pupils, such concentration upon a systematic sequence has obvious advantages, among which is the automatic grouping of pupils who are relatively homogeneous. For persons who advocate electives without reference to major or minor sequences or curricula of defined purposes, little can be said except that such a policy provides in an excellent manner for educational opportunism of immature, ill-advised pupils.

Reorganized five- or six-year schools have an opportunity to offer longer sequences during both the exploratory and the intensifying periods of a pupil's career. Such schools can permit pupils to explore activities of a type which are later abandoned and still have their pupils complete a three- or four-year curriculum. Some schools, by following the Solvay plan,[1] encourage pupils to explore their own aptitudes, and, if a change of curriculum is desired after one year, to take a year of "readjustment" for the new curriculum. Although this plan adds a year to the course of a pupil whose first curriculum is later abandoned, it enables him to follow another curriculum as systematically as though it had been his first choice; pupils whose first election is adhered to save a year by avoiding the "readjustment" or ninth year of school.

A failure to recognize the varying expectations of pupils long deterred schools from making special provisions for pupils of certain groups. Strangely enough, the needs of the

[1] See P. W. L. Cox, *Curriculum-Adjustment in the Secondary School* (J. B. Lippincott Company, 1925), pp. 190ff.

pupils who will finish secondary schools and enter higher educational institutions were provided for, while the needs of those who would leave school relatively early or who would not attend school after finishing a secondary school have until recently been overlooked. As most pupils in most schools leave early and as a short course should be simpler to provide than a long course, the discovery of reasons for this condition may be regarded as one of the difficult problems of our day — whether it is or not. At any rate, however, many cities have provided short courses of from a few weeks to two years in length; Wisconsin has, for example, provided such courses for over one-third of her secondary school pupils by means of her vocational schools for adolescents.[1]

The classification of curricula. Curricula have been classified in two principal ways — by their content and by their functions. If, for example, a boy wished to pursue secondary school courses for six years, he might pursue a curriculum which is designated as either general or commercial. If his school offered curricula known by such terms as scientific, classical, and English, he would be likely to find also the equivocal term general; if his school offered curricula known by such terms as mechanical drafting, home economics, and industrial and applied arts, he would be likely to find also the term commerce or commercial. Another term, college preparatory, has been applied to curricula, although its significance has faded as colleges have widened their portals to nearly all graduates who bear their principals' recommendation. As the present tendency to adopt a utilitarian — vocational or nonvocational — attitude toward all curricula is predominant, the designation of curricula by functional terms is desirable if not imperative.

[1] See also Stuart, *op. cit.*, pp. 17ff.

The components of functional curricula have, however, been scientifically determined in few, if any, cases. For the most part certain subjects are assembled as curricula, because of a justifiable belief that the subjects have a perceptible bearing upon some desired object. The vast amount of research which lies between scientific selection of content and the acceptance of current practices should prevent any one's mistaking present-day curricula as ultimate. A recognition of this point does not, however, carry with it a dismissal of current practices as either unworthy or, at present, greatly antiquated; neither does it support the strong tendency of certain administrators to adopt a certain curriculum as the only course by which all adolescents can realize themselves. The classification of curricula upon a functional basis is one of the first steps toward facing curriculum values squarely.

The same procedure is necessary also in determining which subjects shall be required of all pupils as "constants" and which shall be elective for all or certain pupils. Earlier discussions in this treatise have emphasized both the similarities and the differences among individuals and communities. As soon as those similarities and differences together with their implications have been fully determined, curriculum makers can begin with new spirit the quest for electives and, perhaps, for constants. Until that time arrives, there is at least a grain of wisdom in taking curriculum prescriptions cautiously and with due regard for individual pupils.

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